



MODERN  
MANUFACTURING  
INDIA

WWW.MMINDIA.CO.IN

The Official Magazine of



Indian Machine Tool  
Manufacturers' Association

In Association with



International Forming Technology Exhibition

# INCREASING EFFICIENCY WITH AUTOMATION



IMTEX FORMING 2022  
A Curtain Raiser



26 **STARTUP**  
Leading the EV Revolution



54 **PANKAJ ABHYANKAR**  
Senior VP & Business Head  
Godrej Tooling  
Godrej & Boyce Mfg Co Ltd

Samraj Engineering Controls - a pioneer in the field of fabrication for nearly four decades. Production facilities are available in prime manufacturing hub Oragadam Chennai. We are the leader in the field of Sheet Metal Fabrication and have deep knowledge and high skill required for precision fabrication. Ours is an ISO 9001:2015 certified company and we have deployed an effective quality system to meet customer's requirements. A well defined quality control system ensures the quality requirement of customers are met to their satisfaction.



# SAMRAJ ENGINEERING CONTROLS

## Our Facilities



**CNC - Amada 9 Kw Fiber Laser**



**CNC - Amada Turret Punch M/c**



**CNC Turning Machine**



**CNC PRESS BRAKE 80 to 400T**



**Clinch Nut And Standoff Insert Machine**



**Robotic welding with 10 mt rail**



**Tool Grinding Machine**



**Power Press from 30 T to 250T**



**Lathe, Milling , Radial Drilling, Horizontal Boring**



**3 AxiS And 5 Axis Tube Bending**

**End To End Solutions For All Your Fabrication Requirements Under One Roof In India**



**Contact : 94430 50609, 94426 28601**  
 167/2, Mettupalayam Village, (Near Vallakottai Murugan Temple)  
 Sriperumpudur Taluk, Kancheepuram Dist., - 631 604. India

**Email : [chennai@samrajeng.com](mailto:chennai@samrajeng.com)**

**Web: [www.samrajmetalfabricators.com](http://www.samrajmetalfabricators.com)**

AUTOMOBILE



ENERGY

AEROSPACE



DEFENCE

INFRASTRUCTURE

HEALTHCARE

TEXTILE

OIL & GAS

PUMPS & VALVES

**DX Large Series**  
CNC Large Turning Centre



**AX Series**  
CNC Turn Mill Centre



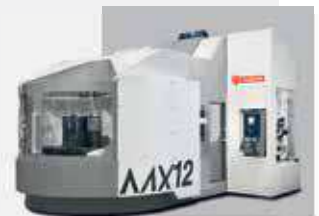
**EX Series**  
5-Axis CNC Moving Column  
Machining Centre



**K3X8 FIVE**  
5-Axis CNC High Speed Bridge Type  
Vertical Machining Centre



**MX 12**  
5-Axis CNC Universal Machining Centre



**MTX Series**  
CNC Multi Tasking Machining Centre



**JYOTI CNC AUTOMATION LTD.**

G – 506, G.I.D.C. Lodhika, Village : Metoda, Dist : Rajkot – 360021, Gujarat (INDIA).  
T + 91–2827–235100/101, E info@jyoti.co.in, sales@jyoti.co.in jyoti.co.in

JyotiHuron



# CONTENTS

VOL 6, ISSUE 1 - MAY-JUNE 2022



12



38



42



46



52

- |  |  |
|--|--|
| 06 FOREWORD  | 36 ADDITIVE MANUFACTURING<br>Changing Medical Implants     |
| 08 EDITORIAL   | 38 COMPANY PROFILE<br>Rooted in Legacy                     |
| 10 IMTMA'S DESK<br>V Anbu Superannuated<br>From IMTMA                | 42 AUTOMOTIVE<br>Making Things Visible                     |
| 12 VIEWPOINT<br>Bolstering Growth                                    | 46 INDUSTRIAL LUBRICANTS<br>Bringing Gear Oils to the Test |
| 16 COVER STORY<br>Increasing Efficiency Using<br>Automated Solutions | 51 SUBSCRIPTION FORM                                       |
| 22 BIG INTERVIEW<br>With the Right Tools to Grow                     | 52 SME<br>Seals of Quality                                 |
| 26 EVENT PREVIEW<br>IMTEX FORMING 2022 -<br>A Curtain Raiser         | 54 STARTUP<br>Leading the EV Revolution                    |
|  | 58 COMPANY INDEX &<br>ADVERTISER INDEX                     |

# IMPRINT

**PUBLISHER**

**DIRECTOR GENERAL, IMTMA**

**EDITORIAL**

**Editor-in-Chief**

**Soumi Mitra**

**Chief Copy Editor**

**Poonam Pednekar**

**Correspondent**

**Arunima Nath**

**Sub-Editor**

**Sovan Tudu**

**Design**

**Magic Wand Media**

**SALES & MARKETING**

Indian Machine Tool Manufacturers' Association  
(IMTMA)

Murali Sundaram, Magic Wand Media Inc

[murali.sundaram@magicwandmedia.in](mailto:murali.sundaram@magicwandmedia.in)

Published and Printed by Indian Machine Tool Manufacturers' Association (IMTMA). Printed at Pentaplus Printer's Pvt Ltd 20/1, 4th main, 5th cross, Industrial Town, Rajaji Nagar, Bangalore-560044, Karnataka and Published from Indian Machine Tool Manufacturers' Association; Head Office: 10th Mile, Tumkur Road, Madavara Post, Bengaluru - 562123, Karnataka. Editor: Soumi Mitra

**Publishing frequency:** 6 times per year

**Manuscripts:** No liability is accepted for unsolicited manuscripts. They will be returned only if accompanied by sufficient return postage.

All rights reserved. Reprints, digital processing of all kinds and reproduction only by written permission of the publisher. Any views, comments expressed are the sole responsibility of the respective authors, IMTMA and Modern Manufacturing India and its partners do not undertake any responsibility, implied or otherwise.

**Disclaimer:** Every effort has been taken to avoid errors or omissions in this magazine. In spite of this, errors may creep in. Any mistake, error or discrepancy noted may be brought to our notice immediately. It is notified that neither the publisher, the editor or the seller will be responsible in respect of anything and the consequence of anything done or omitted to be done by any person in reliance upon the content herein. This disclaimer applies to all, whether subscriber to the magazine or not. © All rights are reserved. No part of this magazine may be reproduced or copied in any form or by any means without the prior written permission of the publisher. All disputes are subject to the exclusive jurisdiction of competent courts and forums in Bangalore only. While care is taken prior to acceptance of advertising copy, it is not possible to verify its contents. IMTMA cannot be held responsible for such contents, nor for any loss or damages incurred as a result of transactions with companies, associations or individuals advertising in its newspapers or publications. We therefore recommend that readers make necessary inquiries before sending any monies or entering into any agreements with advertisers or otherwise acting on an advertisement in any manner whatsoever.

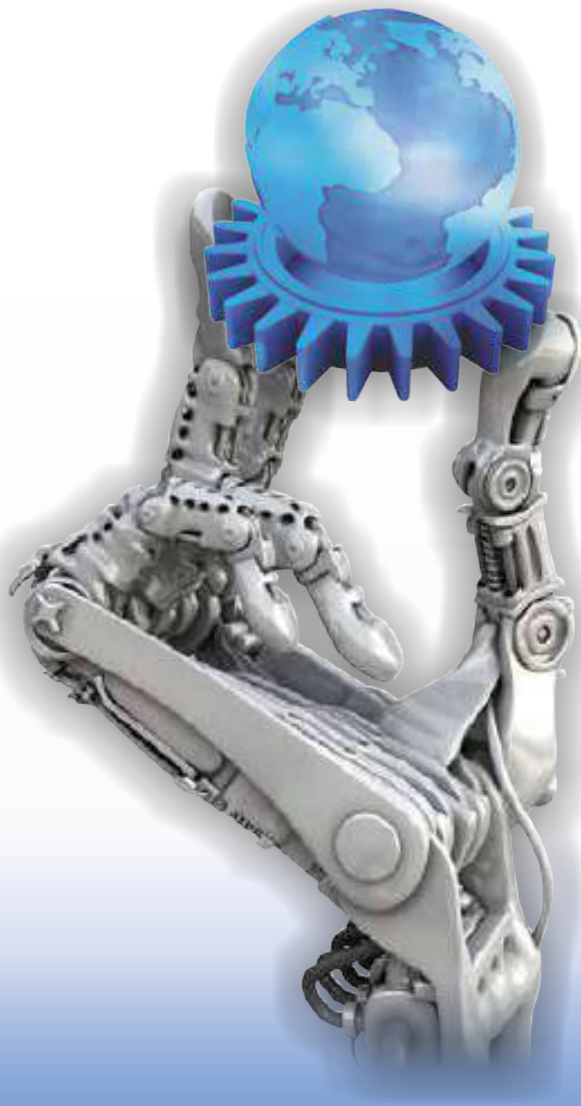
# India's Premier International Machine Tools Show

ORGANISED BY



**ACMEE 2023**  
15<sup>th</sup> International Machine Tools Exhibition  
An AIEMA Initiative  
**15 - 19 June 2023**  
Chennai Trade Centre, Chennai, India

TITLE SPONSOR



———— June 2023 ————

**15** **16** **17** **18** **19**

**Machine Tools**  
**Metal Forming**  
**Metrology**  
**Robotics & Automation**

PLATINUM SPONSORS



GOLD SPONSORS



SILVER SPONSORS



SIDCO - AIEMA Tower, First Main Road, Ambattur Industrial Estate, Chennai 600 058. Phone : +91 - 73052 82228, E-mail : info@acmee.in

**Visit [acmee.in](http://acmee.in) for Space Booking**

# FINDING AVENUES FOR GROWTH



Source: BFW

**RAVI RAGHAVAN**  
**PRESIDENT**  
**INDIAN MACHINE TOOL**  
**MANUFACTURERS' ASSOCIATION**  
**(IMTMA)**

Dear Readers,

I am happy to state that our industry is recovering and progressing well. The green shoots are evident as the year unfolds. India's manufacturing PMI rose to 54.9 in February, signaling an improvement in the health of manufacturing, as per IHS Markit Survey.

As the apex Association of the Machine Tool industry in India, one of the prime focus areas is broadening our horizons through further development of products for domestic and global markets.

The Indian Machine Tool industry will continue to create larger space by increasing its sectoral reach, offering new products and innovative solutions, and transforming the manufacturing ecosystem.

Addressing the myriad opportunities and challenges paves the way for long-term sustainable growth for us and our stakeholders, including the end-users of machine tools.

Indian Machine Tool Manufacturers' Association (IMTMA) is organizing the seventh edition of IMTEX FORMING 2022 - South East Asia's largest exhibition on metal forming technologies, from June 16-21, 2022, at Bangalore International Exhibition Centre (BIEC) in Bengaluru. Concurrent shows will include Tooltech 2022 and Digital Manufacturing. While the former will focus on Machine Tool Accessories, Forming Tools, Die & Moulds, Metrology, and CAD/CAM, the latter will feature the latest innovations in Additive Manufacturing and Industry 4.0.

*IMTMA is organizing the seventh edition of IMTEX FORMING 2022 from June 16-21, 2022, at BIEC in Bengaluru. Tooltech 2022 - focusing on machine tool accessories, forming tools, die & moulds, metrology, CAD/CAM, etc. and Digital Manufacturing - featuring the latest innovations in Additive Manufacturing and Industry 4.0 will be held concurrently.*

Over 350 exhibitors from 16 countries will be participating in the exhibition, which is being held after a gap of more than two years and provides ample opportunity for B2B networking and interactions.

I am sure that these exhibitions will act as a catalyst for manufacturing growth as the economy and industry stakeholders benefit from IMTEX FORMING 2022 & Tooltech 2022.



Helping aircraft get off the ground. **Together.**

Two world leaders in **industrial process fluids**, Quaker Chemical and Houghton International, have come together as one company to keep our aerospace customers ahead in a changing world.

As Quaker Houghton, we are proud to partner with the world's most advanced aerospace companies to solve complex manufacturing challenges with a complete range of metalworking fluids and peelable coatings earning aerospace approvals.

[quakerhoughton.com](http://quakerhoughton.com)



# NLX 2500 | 700 WITH GANTRY LOADER GX 10 T

# NLX SERIES UNIVERSAL TURNING



## BMT REVOLVER

with 10,000 rpm



## INTEGRATED AUTOMATION

z.B. Gantry Loader GX 10 T for  
workpieces up to  $\varnothing 200 \times 150$  mm

## EXCLUSIVE TECHNOLOGY CYCLE gearSKIVING

Highly productive machining process:  
up to 8 times faster than gear shaping  
[www.dmgmori.com/gearcutting](http://www.dmgmori.com/gearcutting)



## UP TO $\varnothing 80$ mm

Bar machining (Chuck components  
up to  $\varnothing 460$  mm)

WE  
*love*  
AUTOMATION

**DMG MORI**

Find out more about Automation:  
[automation.dmgmori.com](http://automation.dmgmori.com)



*Soumi Mitra*

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

# MAKING THE BLUEPRINT OF ‘NEW INDIA’

**T**his year, India is commemorating its 75 years of evolutionary journey and achievements with the theme ‘Azadi ka Amrit Mahotsav’. The celebration embodies India’s socio-economic-cultural progress and growing prowess, notably in engineering, manufacturing, and R&D.

As a country, we are now gearing up towards the pioneering vision of our Hon’ble Prime Minister Narendra Modi of becoming a self-reliant nation—Atmanirbhar Bharat. The mission is focused on accelerating exports, increasing manufacturing activities in India, minimizing the scope of dependency on imports, and creating job opportunities.

The recent launch of the Indian Navy’s two indigenously built, technologically advanced frontline warships – ‘Surat’ and ‘Udaygiri’ – is testimony to our country’s growing self-reliance and indigenous capability. In the last five financial years, more than two-thirds of the Indian Navy’s modernization budget has been spent on indigenous procurement. Of the 41 ships and submarines ordered by the Indian Navy, 39 are from Indian shipyards.

Similarly, to boost indigenization of defense production and encourage home-grown manufacturing technologies, the Ministry of Defence, Government of India has introduced a ‘Positive Indigenisation List’ of 209 items for which there would be an embargo on the import beyond the timeline. This will create more opportunities for Indian manufacturers to develop advanced technologies to meet the requirements of the Defense industry.

To this end, an innovation ecosystem – Innovations for Defence Excellence (iDEX) – has been created for MSMEs, Startups, Individual Innovators, R&D Institutes, and Academia to foster innovation and technology development in Defense & Aerospace.

Sunshine sectors such as Defense & Aerospace, Medical, Electric Vehicle, White Goods, Heavy Electricals, and so on are slated to increase demand for machine tools. The Machine Tool industry is the bedrock of the Manufacturing sector. Hence, the more sophisticated the machine tools, the better the production of

high-quality precision machinery used in critical applications.

In this backdrop, we take pride in sharing that the country’s apex body of machine tools, Indian Machine Tool Manufacturers’ Association (IMTMA), is also marking its milestone of 75 years. For the first time in the much-awaited IMTEX FORMING 2022 show,

IMTMA is housing a dedicated ‘Atmanirbhar Bharat’ Pavilion to showcase how the Indian Machine Tool industry is marching towards self-reliance.

Team MMI looks forward to meeting you at this in-person IMTEX edition and witnessing the technological marvels at the show. It goes without mentioning that your feedback is our motivation to continue producing curated content.

*“Time waste differs from material waste in that there can be no salvage. The easiest of all wastes and the hardest to correct is the waste of time, because wasted time does not litter the floor like wasted material.”*

*- Henry Ford*



# IPG Revolutionizes **E-Mobility** Applications

**HIGH POWER  
SCAN HEADS**



**INLINE WELD  
MONITORING**

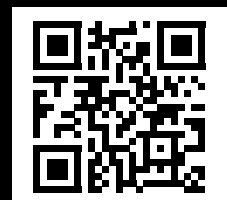
**ADJUSTABLE MODE  
BEAM LASERS**



**VISIT US:**

**IMTEX 2022  
HALL # 4 BOOTH # C101  
VENUE - BIEC, BENGALURU  
DATES - JUNE 16 - 21, 2022**

**LEARN MORE**





## V ANBU SUPERANNUATED FROM IMTMA

V Anbu is known to one and all in the manufacturing fraternity. The following account of his contribution to the machine tool and exhibition industries is a snippet of the value he has added. With his guidance, expertise, and encouragement, IMTMA has not only coped with the challenges of all measures but has also thrived. Here's honoring his achievements and the benchmark he has set...



Source: IMTMA

V Anbu, Former Director General & CEO, IMTMA and BIEC

As the President of UFI, he continued to work towards the Indian Exhibition industry, finding wider recognition and global acceptance despite heading UFI at a time when the world was ravaged by the COVID-19 pandemic. IMTMA wishes him all the very best for his post-retirement journey and future endeavors.


**V**Anbu, Director General & CEO of Indian Machine Tool Manufacturers' Association (IMTMA) and Bangalore International Exhibition Centre (BIEC), has retired after a long and distinguished career spanning nearly two decades. Anbu was the first Indian to become the President of UFI, the Global Association of Exhibition Industry. He served on the UFI Board of Directors since 2011 and as a UFI Executive Committee member from 2017 until his resignation.

### **Wearing many hats**

As IMTMA head, he shouldered the responsibilities of building teams and processes in successful and challenging times. The first major success for him happened when IMTEX moved to Bangalore in 2007. It was the beginning of a new chapter for IMTMA and for him personally, as it was the first show at the newly built exhibition center. Under his able leadership, IMTMA continued to expand its portfolio by exploring new avenues, adding new events such as Machine Tool Industry Summit,

National Productivity Summit, and the first batch of training programs, besides being actively involved in the construction of BIEC right from its initial stages. Other key initiatives of IMTMA, such as Advanced Machine Tool Testing Facility (AMTTF), Advanced Machine Tool Development Centre (AMTDC), and Tumakuru Machine Tool Park, close to Bangalore, all began under his esteemed guidance.

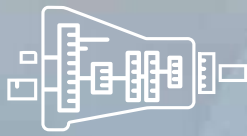
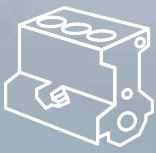
He was also one of the brains behind the Green Manufacturing Cell, set up to enable member companies to become world-class green manufacturing companies and manufacture machine tools as green products. IMTMA also established close ties with leading industry associations such as the Confederation of Indian Industry (CII), the Federation of Indian Chambers of Commerce and Industry (FICCI), the Automotive Component Manufacturers Association of India (ACMA), the Society of Indian Automobile Manufacturers, etc., and the Government of India, Government of Karnataka, and other state governments.

As the President of UFI, he continued to work towards the Indian Exhibition industry, finding wider recognition and global acceptance despite heading UFI at a time when the world was ravaged by the COVID-19 pandemic. IMTMA wishes him all the very best for his post-retirement journey and future endeavors. 



# Comprehensive Machining Solutions for an extensive range of **AUTOMOBILE COMPONENTS**

**ENGINE | TRANSMISSION | STEERING | BRAKING**



19<sup>th</sup> Edition



**2<sup>nd</sup> - 6<sup>th</sup> June**

**Visit us @ Hall B | Stall no 3**



INDIA'S FINEST  
RANGE OF CNC MACHINES



FOLLOW US ON:  
LMW CNC



INTEGRATED SOLUTIONS

**TURNING | MILLING | TURNMILL**

# BOLSTERING GROWTH

The Government of India is not only promoting schemes to help the present group of startups but also motivating budding entrepreneurs, startups, and students from all domains who intend to be independent and lead the vision of 'Atmanirbhar Bharat' forward. Below are some such initiatives that have been introduced for the development of the Indian startup ecosystem.



Source: Magic Wand Media

**T**he startup ecosystem in India is growing at an expeditious rate. Not even halfway through the year, 13 Indian startups have already entered the Unicorn Club. Annual surveys are conducted every year to track the progress and suggest the future moves of the startup ecosystem in India. The pandemic situation has put the startup ecosystem in jeopardy. They are compelled to watch the venture capital dry out. To orchestrate the situation, the Government has launched favorable schemes and policies that are proving to be of great assistance in the direction of growth.

Micro, Small, and Medium Enterprises (MSMEs) contribute a staggering 30 percent to the country's GDP, around 45 percent of the manufacturing output, and approximately 48 percent of the country's exports. The MSME sector has employed more than 11 crore people, establishing itself as the 'Backbone of the country'.

### Government support is crucial

The Indian MSME sector has reticently been supporting the national economy since its inception. Around 45 lakh MSMEs throughout the country contribute about 6.11 percent

of GDP from manufacturing and 24.63 percent of GDP from services. They are crucial to the production and manufacturing of a variety of products for both domestic as well as international markets. It is quite imperative now, more than ever, that schemes like 'Atmanirbhar Bharat' are focused on building a startup ecosystem in India to not only build but also strengthen the capability and capacity to develop appropriate local technology and provide fierce competition in domestic and international markets. Startups require both monetary and technical support to overcome the initial road-

BHOOMA KRISHNAN  
Chief Operating  
Officer  
Devic Earth Pvt Ltd



blocks. Initiatives by the Indian Government, such as 'Make in India' and other startup programs, are providing propulsion to manufacturing startups in India.

The Government of Karnataka has provided incentives that promote startups in the Electronics System Design & Manufacturing sector (ESDM) to develop Karnataka into a global ESDM hub through the Karnataka Electronics System Design & Manufacturing (KESDM 2017-22) policy. The policy aims at stimulating the growth of 2,000 ESDM startups by the end of 2022, thereby creating 20 lakh new job opportunities, reaching US\$40 billion in ESDM revenues by 2025.

Following are the incentives by the Government of Karnataka that are adding value to the state's startup ecosystem:

- **Research & Development Grant:** provides up to ₹2 crore per year, twice during the policy period.
- **Reimbursement of Quality Certification Costs:** covers up to 50 percent of testing and certification costs, equivalent to approximately ₹10 lakh per year.

- **Reimbursement of Prototyping Costs:** covers around 50 percent of total costs, equivalent to approximately ₹10 lakh per year.
- **Patent Registration Incentive:** covers a maximum amount of ₹2 lakh for domestic registration and ₹10 lakh for international registration.
- **International Marketing Incentive:** Covers up to ₹5 lakh annual amount for two members.

### **Technology is another vital element**

Another pivotal element in the growth of the manufacturing sector is Technology. Consistent investment in avant-garde technology is vital in maintaining the quality to surpass the competitors. The Government is providing the tools and technologies to Indian startups and MSMEs to compete with global peers.

The Government has launched Credit Linked Capital Subsidy Scheme (CLCSS) to promote Technology Upgradation. The scheme provides financial assistance to MSMEs to upgrade their technology and implement avant-garde technologi-

cal platforms in their business. Under CLCSS, the Government provides a 15 percent subsidy for an investment of up to ₹1 crore to upgrade technology for startups and MSMEs in India. The businesses that have invested in technology using term loans borrowed from Public Lending Institutions can avail the following benefits of CLCSS:

- With a 15 percent subsidy on the purchase of advanced technology, the MSMEs' loan burden decreases.
- At the same time, their efficiency increases, and the cost of production decreases, resulting in maximized profit and higher growth.
- With the growth in rural industries, employment opportunities increase, and living conditions for the entire local population improve.
- Thanks to this unique scheme, even micro, small, and medium-sized industries can now manufacture high-quality products and compete globally.
- Credit linked capital subsidy scheme is helping small-scale industries to adapt, scale, and boost their production.

**Startups require both monetary and technical support to overcome the initial roadblocks. Initiatives by the Indian Government, such as 'Make in India' and other startup programs, are providing propulsion to manufacturing startups in India.**



Source: Magic Wand Media

**The Government has launched Credit Linked Capital Subsidy Scheme that provides financial assistance to MSMEs to upgrade their technology and implement avant-garde technological platforms in their business.**



Source: Magix Wand Media

### **Design-centric approach is a must**

The key to consistent novelty and creativity are design and innovation for any sector. Every startup and MSME must have a design-centric approach to solve the problems of their niche. To encourage and inspire small businesses to experiment and try out new designs for their products, the Ministry of Micro, Small, and Medium Enterprises has created a Design Clinic to induce design-related expertise for startups and MSMEs. Under this scheme, the Government will provide up to ₹60,000 aid for attending design seminars and up to ₹3.75 lakh or 75 percent of the cost of a seminar, wherein the entrepreneur and their team can learn and implement design theories for their startups.

### **Schemes to further benefit startups**

Other Government certifications and eligibility-specific schemes to benefit from are as follows:


- **ZED Certification:** This is a step toward the quality assessment of the products to ensure better quality so that the exported goods are never returned. This Zero Defect and Zero Effect certification offer financial, technolog-

ical, and tools support to existing and new manufacturing units, enabling them to embrace world-class manufacturing processes and technology in their startups to manufacture the best-in-class products.

- **Startup Recognition and Tax Exemption:** Startups incorporated on or after April 01, 2016, can apply for income tax exemption. The recognized startups that are granted an Inter-Ministerial Board Certificate are exempted from income tax for three consecutive years out of 10 years since incorporation.
- **Government Public Procurement Eligibility:** The Government of India has authorized its ministries, departments, and public sector undertakings to relax norms in all public procurements. Startups can avail of an exemption on prior turnover, prior experience, and an earnest money deposit. DPI recognized startups can now get listed as sellers on the Government of India's largest e-procurement portal Government e-Marketplace (GeM).
- **Self-Certification under Labor and Environmental Laws:** Startups are allowed to self-certify their compliance under six Labor and three Environment laws for a peri-

od of three to five years from the date of incorporation.

- **Fast-tracking and Rebate on Applications for Intellectual Property:** Startups are eligible for an 80 percent rebate in patent filing fees and 50 percent on trademark filing fees. Additionally, startups are also provided the facility of expedited examination of patent applications to reduce the time taken in granting patents. Also, 'Support for International Patent Protection in E&IT (SIP-EIT)', launched by the Department of Electronics and Information Technology (DeitY), provides financial support for international patents.
- **Access to ₹10,000 Crore Fund of Funds:** To provide equity funding support for the development and growth of innovation-driven enterprises, the Government has set aside a corpus fund of ₹10,000 crore managed by SIDBI. This Fund of Funds implies that the Government participates in the capital of SEBI registered Venture Funds, which invest twice the amount in startups.

The Government is not only promoting these schemes to help the present group of startups benefit from them but also motivating budding entrepreneurs, startups, and students from all domains who intend to be independent and lead the vision of 'Atmanirbhar Bharat' forward. These initiatives have been introduced for the development of the Indian startup ecosystem. The country now seems to be heading towards the golden era of entrepreneurship, where if things go as planned, India may host as many successful startups as the USA or any other leading nation by 2030. 

# EPLAN

## efficient engineering.

EPLAN provides software and service solutions in the fields of electrical, automation and mechatronic engineering. We develop one of the world's leading design software solutions for machine, plant and panel builders.

**"Efficient engineering" is our focus:** EPLAN is the ideal partner to streamline challenging engineering processes. No matter whether small or large enterprises, we strive to enable our customers to apply their expertise more efficiently.



Contact **Ms. Sindhu Krishnappa** to know how to make your Engineering Efficient.

+91 96865 50509    sindhu.k@eplan.in

www.eplan.in    info@eplan.in

PROCESS CONSULTING

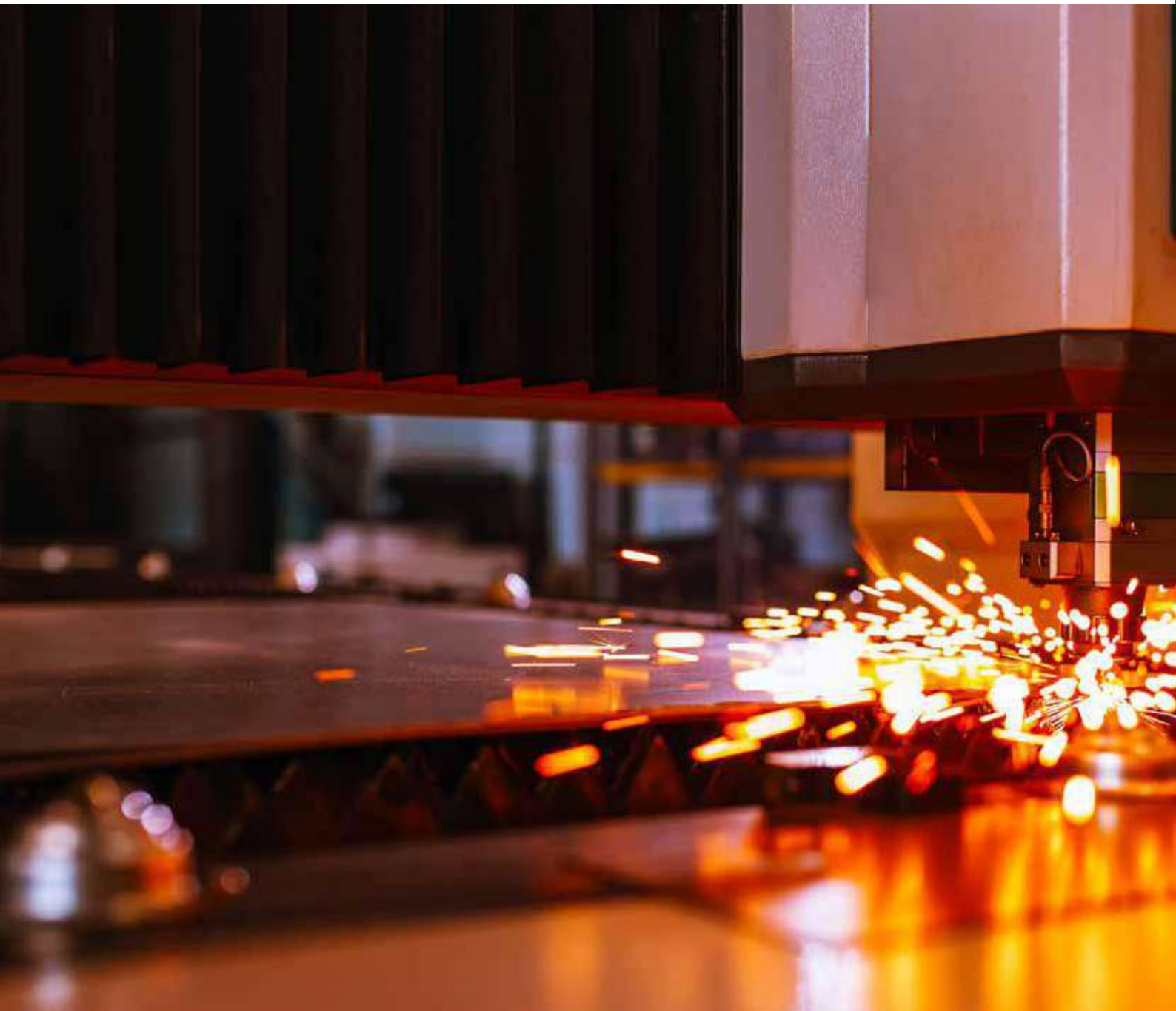
ENGINEERING SOFTWARE

IMPLEMENTATION

GLOBAL SUPPORT

FRIEDHELM LOH GROUP





# INCREASING EFFICIENCY WITH AUTOMATION

MARK VELTHUIS  
President  
Jedox Asia Pacific



It is highly crucial to recognize the potential for automation where it can have the greatest impact. Embracing easily-navigable, time-saving technology in the face of increasingly more complex processes not only boosts a company's productivity but also prepares it for the ongoing dramatic rise in competition.



Source: Magic Wand Media

**I**t is no secret that automation and AI-based solutions are growing across all industries. Our world is moving towards simplification to manage increasing complexity in the workplace and beyond. If you've ever discussed accuracy and efficiency at a Lessons Learned meeting with your project team, you may have already begun brain-

storming how to automate the tedious and cumbersome processes that can rob time from your projects' key players and detract from the project quality. That's why streamlining business and sales planning through an automated approach enhances scalability, collaboration, and strategy, leading to a net gain in time, performance, and innovation.

Imagine your business is a team of pole vaulters. Envisioning business planning strategies as pole vaulting is a useful way of gauging how high your current abilities are lifting you. It is a sport that requires agility, speed, strength, and technical skills. If your business is not able to achieve high technical skills due to a lack of these other categories, whether it be mitigated collaboration or exhausted resources, there is still a lot of potential to unlock. Automating and integrating simple but essential tasks is the key to reaching greater heights.

#### **What the numbers say**

McKinsey Global Institute (MGI) has reported that by 2030, automation and AI-based solutions will be one of the main sources of higher productivity and improved business performance. Anything that is predictable and generic, such as certain manual tasks and ones that require basic cognitive skills, will be replaced by automation at a forecasted rate of 14-15 percent. This does not only apply to physical labor, as we often imagine; these can include basic administrative tasks in business and sales planning, such as generating data reports and manual updating of information. More companies each day are eliminating the need to sweat over spreadsheets where integrated IT platforms and machine learning can swiftly and accurately serve them what they need.

At the same time, MGI continues, tasks that are geared towards higher cognitive functions and social interaction will substantially grow in demand. This transition highlights the gradual need for new skills once technology has relieved

McKinsey Global Institute has reported that by 2030, automation and AI-based solutions will be one of the main sources of higher productivity and improved business performance. Anything that is predictable and generic, such as certain manual tasks and that require basic cognitive skills, will be replaced by automation at a forecasted rate of 14-15 percent.

Quality-driven strategies have started expanding to include automated methods for gathering and organizing accurate data. Although you can't make up for lost time, the greatest advantage of automated processes is that once they are established, the benefits are significant right from the start.

Source: Magir Wand Media



workers of routine operations and long processing times, thereby opening the door for more meaningful collaboration. Anticipating progress in these areas means prioritizing the development of your business's digital navigation along with the management of resource expenditure where it counts. The challenge, of course, is recognizing the potential for automation where it can have the greatest impact. There are many reasons why your business should embrace easily-navigable, time-saving technology in the face of increasingly more complex processes. Not only does it serve your team by way of productivity, but it also prepares your company for the ongoing dramatic rise in competition. Thus, we must ask more specifically: what are some of the ways automated Enterprise Performance Management (EPM) can be adopted into business processes to ensure efficiency and success?

### **Agile systems for higher productivity**

Let's address the obvious. Higher productivity can be achieved through smooth and efficient collaboration between leaders and team members. However, this goal calls for condensing unnecessary steps in accessing information and making processes more user-friendly. Openness to automated solutions allows for more creative approaches to everyday problems. For example, consider what a disruption in the supply chain can do to sales and planning, sometimes at a moment's notice. This is an issue whose effects can be felt intensely at various stages in production. In circumstances like these, the need for agility in sales planning is a pivotal factor in ensuring the effective completion of the processes at hand. What happens when referencing data reports is hindered by stalling load times, asynchronous inputs, or even falling down the

rabbit hole in search of files and documents before finding the exact piece of information you need? How fast and strong can your business react when issues arise? Situations such as these make it clear that directing focus towards quick methods for accessing data across multiple platforms allows communication and decision-making to proceed without a hitch. Indeed, solutions to problems in business planning can often be barred by separate and unexpected obstacles in collaboration. For an effective illustration of what success in this area can look like, we can turn to stories of optimization, such as the internationally-based mechanical engineering specialist the MS Group that revamped its project and process management systems through parallel processing and reporting conversion. It achieved this success-critical modification by replacing its manual project plan with a daily updated

multi-project management system that worked in conjunction with synchronous mapping of relevant supply chains. Rather than wading through disjointed sources of information and risking miscommunication, this update removed the tedium and inaccuracy of manual input, among other improvements to accessibility. This example sheds light on how teams can rely on the resourcefulness of automated solutions to bring out the best quality in their work and reach the finish line on time.

### **Time-saving strategies for busy planners**

Automation can enhance resource allocation in many business functions concerned with planning and analyzing data. By condensing project management and financial resources into simpler interfaces that do the work for you, the time and energy spent swapping between platforms and tasks

that have not yet been integrated can be drastically reduced. Workers who were once bound up in complicated, or at the very least strenuous processes, are now to spend their time on strategy and creating value for the company in new ways.

For a good model of responding to outmoded systems with creative, automated solutions, we can look at the success of Interstuhl, a Germany-based office furniture manufacturing company that wanted to smoothly manage the expansion of its business. The goal was to address the need for secure IT solutions that integrate well with internal resources and eliminate manual reporting in favor of automated systems. Not wanting to ditch existing platforms whose potential was not yet being realized, the company discovered easy-to-learn cooperative systems that brought much-needed harmony among the tools they had already been working with.

Furthermore, these systems lifted the burden of scanning error-prone Excel sheets that impeded strategic analysis. By incorporating manageable interfaces, Interstuhl optimized time savings for the generation of reports by 30 percent.

### **Improving business performance permanently**

Freedom and flexibility are valuable. When employees are freed up to work more on strategy and value creation, a natural outcome is improved long-term business performance. Quality-driven strategies have started expanding to include automated methods for gathering and organizing accurate data. Although you can't make up for lost time, the greatest advantage of automated processes is that once they are established, the benefits are significant right from the start. Investing in these areas leads to positive outcomes across the board, and the market is catch-

Vaulting over the obstacles that stand in the way of creativity and efficiency allows workers to exert their skills on new, more rewarding challenges that can make or break business outcomes and reputation. Zeroing in on these obstacles is not always easy but is absolutely crucial in the pursuit of successful process implementation.



Source: Magic Wand Media

And here is the beauty of digitalization: Olympians must train for years to arrive at their goals; automation can transform your business within months and sustain it with a few clicks.

Source: Magic Wand Media




ing on to this fact very quickly. It has been reported that one of the two most common deployments of automation technology is in business-process platforms. Business leaders everywhere are waking up to the lasting benefits of machine learning, which can include boosting profits, cutting down on waste, improving employee satisfaction, and overcoming competition.

**From Starting Line to Gold Medal**

Vaulting over the obstacles that stand in the way of creativity and efficiency allows workers to

exert their skills on new, more rewarding challenges that can make or break business outcomes and reputation. Zeroing in on these obstacles is not always easy but is absolutely crucial in the pursuit of successful process implementation. When businesses expand their ability to maximize their time collaborating, especially by eliminating the need to tediously crunch and manage data, there is no telling how far they can go. What will your business accomplish with all the time you'll be able to save and the high-accuracy data you'll be able to reference?

Viewing business planning holistically means you will be prepared to stick the landing and go for the gold. And here is the beauty of digitalization: Olympians must train for years to arrive at their goals; automation can transform your business within months and sustain it with a few clicks. The real, more satisfying exercise you will be truly responsible for is the refinement of your business's insights and creative skills, the aspects of business that propel society into a new age of human development and achievement. 

**Who did you notice more?**

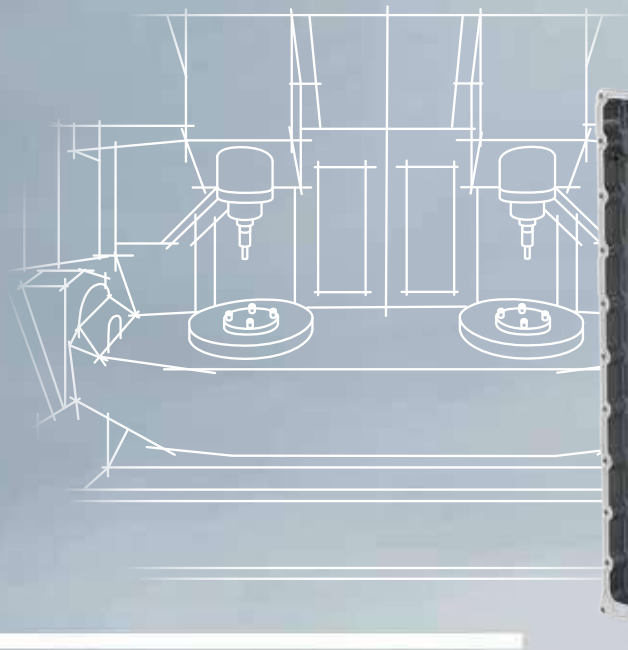


The Official Magazine of  
  
 Indian Machine Tool  
 Manufacturers' Association  
 In Association with  




For Advertising Contact:  
 Murali Sundaram: +91 9740048390  
 murali.sundaram@magicwandmedia.in

# AUTOMOTIVE



## Two spindles for maximum productivity

600, 800, 1,200 mm: With their graduated spindle clearance, the three Series 22, 25 and 28 are precisely designed for the various workpiece dimensions and cover the whole range of sizes and complex components for automotive applications.

THE ECONOMIC TIMES



**CHIRON**  **Group**

CHIRON India Machine Tools Pvt. Ltd.,  
#33, Naseer Affinity, 1st Floor,  
Miller Tank Bund Road, Kaveriappa Layout  
Vasanth Nagar, Bangalore - 560 052 / India  
P +91 80 4905 6490  
info.india@chiron-group.com

[www.chiron-group.com](http://www.chiron-group.com)

## WITH THE RIGHT TOOLS TO GROW

Over the years, Godrej's Tooling business has retained its position as a key player in the design and manufacture of tools and tooling equipment. Pankaj Abhyankar, Senior Vice President & Business Head, Godrej Tooling, Godrej & Boyce Manufacturing Company Ltd, shares with MMI's Editor-in-Chief, Soumi Mitra the company's current focus on the EV industry, its innovative offerings, the strategy to adopt Industry 4.0 technologies for sustainable manufacturing, and much more...



Source: Godrej Tooling, Godrej & Boyce Mfg Co Ltd

“We are currently shifting our focus on increasing our R&D initiatives towards growing the portfolio of tools and dies with a special focus on the EV Industry, as the industry is rapidly shifting to e-mobility and the demand for new engines and high metal sheet parts is rising.”

**Pankaj Abhyankar, Senior Vice President & Business Head, Godrej Tooling, Godrej & Boyce Manufacturing Company Ltd**

**What was the vision that led to Godrej Tooling's inception and subsequent remarkable growth?**

**Pankaj Abhyankar:** As an industry leader with deep established customer connects and supported by an enhanced ecosystem of supply chain partners, we have always been able to recognize mega trends in the industry and strategize correctly to anticipate industry requirements well in advance.

We have played a key role in our customer value chain to ensure that we meet demands well in time so that vehicle production and launch events are on schedule and as committed. We are currently shifting our focus on increasing our R&D initiatives towards growing the portfolio of tools and dies with a special focus on the EV Industry, as the industry is rapidly shifting to e-mobility and the demand

for new engines and high metal sheet parts is rising.

We continue our efforts to remain a key stakeholder in the Automobile industry's growth and expect a minimum 30 percent YOY increase in our revenues.

**Tell us about the company's offerings and the industries they cater to.**

We have retained our position as a key player in the designing and

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



manufacturing of tools and tooling equipment. We manufacture custom-built, high-quality tooling that caters to a broad cross-section of players across industries. We have expertise in industrial machines, die casting dies, and complex and large-sheet metal tooling for auto panels. With a team of 500 people, including 50 designers and 350 trained associates, supported by 39 CNC machines and 140 conventional machines, we are a systems-driven organization, eager to learn and experiment while keeping abreast of the latest technology platforms, software, and manufacturing processes.

Some of the key industries that contribute to our business development include Auto, Indian Railways, Metro Railways, and Ordnance Factories. Apart from the Auto industry, the Electrical and Electronics segments have been projected to drive the most demand for the tooling sector, with 21 percent and 14 percent, respectively, in the coming five years. Some other emerging industries expected to create demand for tools in India include Plastic, Consumer Durables, Medical, White Goods, and Defence.

**You have increased your investment by 10 percent YoY in R&D towards your portfolio of tools and dies with a special focus on the EV industry.**



Source: Godrej Tooling, Godrej & Boyce Mfg Co Ltd



Source: Godrej Tooling, Godrej & Boyce Mfg Co Ltd

“Production of micro-components, plastic, sheet metal, and cast components will rise as these will replace the moving parts in EVs. This will pose immense growth for the Tooling industry to re-tool and enhance the conventional tooling methods.”

**Pankaj Abhyankar**  
Senior VP & Business Head  
Godrej Tooling  
Godrej & Boyce Mfg Co Ltd

E-mobility is gaining traction in India due to its eco-friendly features and comparatively lower total cost of ownership. We have increased our investment by 10 percent YoY on R&D towards a portfolio of tools and dies with a special focus on the EV industry. In the coming year, we are looking to develop new engines, battery boxes, and high-precision sheet metal parts to keep up with the increasing demand for EVs. We also plan to explore tie-ups for exports across identified geographies. Moreover, we have dedicated a part of our R&D budget for EVs, such as light-weighting, alternate materials, and structural castings. We have also applied for a patent for our Cloud-based Smart Connected Die that can remotely monitor a set of operating parameters.

**Godrej Tooling is known for its belief in sustainable development and its processes and products that are formulated to ensure a clean and green India. Please shed light on your initiatives in this regard.**

Environment, Society, and Economy are considered to be the three pillars of sustainable manufacturing and are often referred to as ‘Triple Bottom Line’ (TBL). We are currently utilizing Industry 4.0 technologies, including IoT, 3D Printing, System Integration, Cloud Computing, Machine Learning, AI, Simulation Systems, and more, to address the challenges related to TBL of sustainable manufacturing.

So, Industry 4.0, which was initially a traditional concept of looking at digitizing operations for minimal human inputs, is now being utilized to its full potential by us to reap the benefits of sustainable manufacturing by taking care of resource depletion, waste reduction, energy efficiency, virtualization, and environmental protection. Adopting Industry 4.0 technologies is not just a beneficial and cost-effective concept, but a mandatory practice that will assist manufacturers in achieving sustainable manufacturing and saving costs while also protecting the environment.

**How has your growth been in the Auto sector – passenger vehicles and two-wheelers? Please share your thoughts on the key factors driving the Automotive market’s sentiments.**

Established in 1935, Godrej Tooling became a commercial toolroom in the early nineties, sensing a surge in demand for tools for the Automotive industry; globalization was increasingly being accepted in the Indian scenario.

“Adopting Industry 4.0 technologies is not just a beneficial and cost-effective concept but a mandatory practice that will assist manufacturers in achieving sustainable manufacturing and saving costs while also protecting the environment.”

“As one of India’s leading tool rooms, we have adopted a robust approach that allows us to be agile to take on electric mobility, covering all bases in stimulation, design assembly, and production. Godrej Tooling has a longstanding reputation for being future-ready, and the introduction of advanced automotive dies implies our readiness to remain ahead of the curve.”

There was thus an expectation of a massive inflow of international auto majors accompanied by an intense need for higher technology tools that met global quality standards. Taking complete cognizance of this development, Godrej Tooling invested significantly in infrastructure, capability, and technology and continues to do so to maintain its position as a leading commercial toolroom for the Auto industry for two-wheelers and passenger vehicles.

The Automotive industry is a key consumer of tools, and it consumes over 55 percent of the country’s machine tool production. The pandemic, however, immensely impacted the sales of the Automobile industry, causing a decline in auto orders, thereby affecting the demand for conventional auto parts.

The Auto industry is now recovering, and although cash flow is still a concern, the buying behavior of consumers is gradually normalizing, thereby restoring faith in the demand and production of tools. A surge in the cost of acquisition due to frequent price hikes, an increase in petrol prices, rising pollution, tax rebates, and low

cost of maintenance are driving the transition to e-mobility in India. Auto parts in EVs will have lesser moving parts, thereby reducing the requirement of manufacturing for specific tools proportionately. However, this would call for single-piece constructs, and hence the demand for more complex, higher value-added tools will increase. Production of micro-components, plastic, sheet metal, and cast components will rise as these will replace the moving parts in EVs. This will pose immense growth for the Tooling industry to re-tool and enhance the conventional tooling methods.

**Your exports are up by 15 percent post the second wave of the pandemic. Kindly elaborate on the same.**


We have always been exporting our tools based on our core capabilities of die casting and press tools, where we have gained credibility and have successfully commissioned such projects for Indian majors or Indian subsidiaries of overseas auto majors. While this is a continued strategy, the pandemic did present opportunities through import substitution and localization of parts in

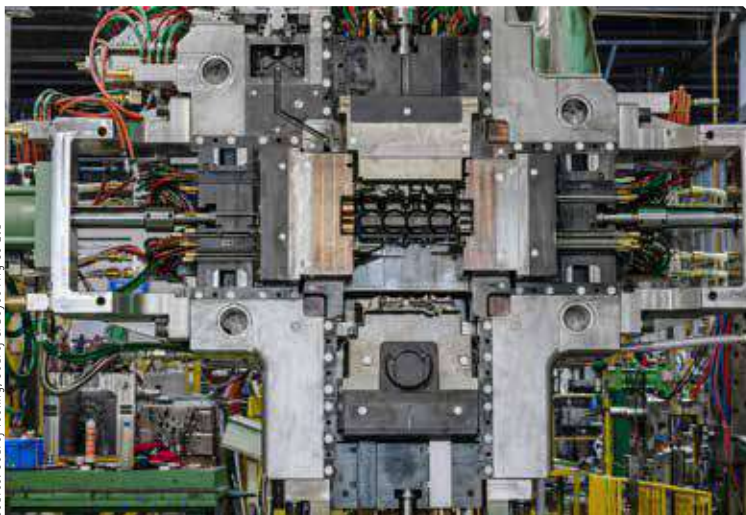
the Indian context. We assisted our customers in overcoming the challenges they faced on account of global stresses in supply chains, assisting in commissioning and ensuring business continuity.

Given our inherent focus on critical parts, we did offer our expertise and experience in this area to gain business and, thus, have been able to garner this pie of the business.

**Considering the Indian Automotive industry opting for stricter fuel norms and increased electrification, Godrej & Boyce has recently announced that its business Godrej Tooling has created a range of advanced automotive dies. Please tell us about it.**

With the Automotive industry rapidly shifting gears towards the adoption of electric vehicles in India, it has necessitated the development of new engines, battery boxes, and high-precision sheet metal parts. To meet the burgeoning demand for modification and replacement of automobile components in electrical vehicles, Godrej Tooling has made a head start by developing advanced dies. Godrej Tooling has also increased its capabilities with the addition of 3D printing and additive manufacturing to develop high-precision dies for components with complex geometry to meet higher functional standards. We have also applied for patent and copyright in overall dies.

As one of India’s leading tool rooms, we have adopted a robust approach that allows us to be agile to take on electric mobility, covering all bases in stimulation, design assembly, and production. Godrej Tooling has a longstanding reputation for being future-ready, and the introduction of advanced automotive dies implies our readiness to remain ahead of the curve. 



Source: Godrej Tooling, Godrej & Boyce Mfg Co Ltd

# The C7015: bringing multi-core in IP65 directly to the machine



BECKHOFF ENABLING  
MADE BY  
**INDIA**

ENABLING CHANGE – YEAR 15

Up to four cores in IP65: with its extremely robust, fanless C7015 ultra-compact Industrial PC, Beckhoff as a specialist in PC-based control technology offers the possibility to install a high-performance Industrial PC in a highly compact design directly at the machine. Versatile on-board interfaces enable connection to the cloud or to other networks. Thanks to the integration of an EtherCAT P interface, further EtherCAT P modules can be connected directly to the C7015. This provides the possibility of automation close to the machine. The integrated Intel Atom® CPU with up to four cores allows simultaneous automation, visualization, and communication in demanding industrial IP65 applications. In addition to classic control tasks, the C7015 is ideally suited for use as a gateway to connect machines and plant sections – and can even handle complex preprocessing of large data volumes thanks to its high processing power.



3 x LAN, 2 x USB,  
Mini DisplayPort  
and integrated  
EtherCAT P port

Beckhoff Automation Pvt. Ltd.  
Pune – 411 001, India  
Phone: +91 (20) 6706 4800  
info@beckhoff.co.in



Scan to  
discover the  
full range of  
applications  
for the C7015

New Automation Technology

**BECKHOFF**

# IMTEX FORMING 2022 - A CURTAIN RAISER

In light of the industry's current period of stability and renewed confidence, Indian Machine Tool Manufacturers' Association (IMTMA) is holding IMTEX FORMING 2022—South East Asia's largest exhibition on metal forming technologies, bringing exhibitors and visitors under one roof to achieve high-quality business results.



Source: Magic Wand Media

**I**MTMA is organizing the seventh edition of IMTEX FORMING 2022 from June 16-21, 2022, at Bangalore International Exhibition Centre (BIEC) in Bengaluru, with concurrent shows—'Tooltech 2022', focusing on Machine Tool Accessories, Forming Tools, Die & Moulds, Metrology, CAD/CAM, and so on; and 'Digital Manufacturing', featuring the latest innovations in Additive Manufacturing and Industry 4.0, among other things.

The exhibition, held after a hiatus of more than two years, is slated to bring together diverse groups and stakeholders on a single platform for knowledge sharing and transacting business. Metal forming technologies such as presses, bending,

welding, and joining; high-speed laser machines; robotics and automation in sheet metal working; additive manufacturing; metrology; and CAD/CAM, all of which are critical to manufacturing, will be demonstrated live, allowing visitors to make well-informed decisions.

Visitors to the six-day exhibition would come from a variety of industries, including Auto, Auto Components, Aerospace, Defence, Railways, Power, Medical Equipment, White and Brown Goods, Oil and Gas Equipment, Ship Building, and many more.

Aside from live machine displays and a focus on digital manufacturing, there will be an 'i2 Academia Pavilion', an event for academia and industry to interact

and explore possible tie-ups. The maiden 'AatmaNirbhar Bharat Pavilion' will showcase indigenous technological capabilities and solutions developed in India.

## Exhibitors' Voice

Although IMTEX is happening after a hiatus of two years, the industry has all the while been striving hard to stay afloat despite supply chain disruptions and financial lows. It has relentlessly been at its task of innovating, waiting patiently for things to stabilize and for an opportunity to physically present its offerings to an audience. Following is a round-up of exhibitors sharing their preparedness after such a long gap and the products they are so keen to showcase.

SOVAN TUDU  
Sub-Editor  
Magic Wand Media Inc  
Sovan.tudu@  
magicwandmedia.in



## AMADA India Pvt Ltd

Hall 4 | Booth B105



**Niraj Seth**  
President  
AMADA India Pvt Ltd

A highly hopeful Niraj Seth, President, AMADA India Pvt Ltd, said, "This is the first big exhibition after lockdown. Looking at the current uptrend, we expect serious buyers to participate in IMTEX 2022 and invest in new machinery to expand their business in the coming days. Though the last two years were not great for business, we are looking at the positive signs of business revival."

The company is launching its flagship model VENTIS3015-AJ series fiber laser cutting machine at IMTEX for the Indian market. He elaborated, "The VENTIS 3015 AJ fiber laser achieves virtually cross-free cutting of a variety of materials and thicknesses, including stainless steel and aluminum. VENTIS utilizes AMADA's revolutionary Locus Beam Control (LBC), the world's first to achieve infinite locus patterns, ensuring optimum fiber laser beam shape control for each specific cutting application. LBC technology achieves unprecedented high-speed and high-quality cutting – up to 3 times faster than a conventional fiber laser."

It has also developed a high-brightness fiber laser oscillator to maintain the optimal quality of the high-energy density laser beam. The combination of LBC Technology and a high-brightness oscillator sets a new world standard for fiber laser cutting speed and quality. He added further, "Apart from the new Fiber Laser, we are also introducing the world's first Dual Servo Press (DSP) drive Press Brake EG4010. This machine offers high accuracy at 0.001 mm and productivity up to 2.2 times higher than conventional machines. NC with built-in CAM and ergonomic design results in intelligent and comfortable processing, shortening lead time and easy operation."



Source: AMADA India Pvt Ltd

## AMPCO METAL India Pvt Ltd

Hall 3A | Booth A116



**Tushar Pawar**  
National Head  
AMPCO METAL India Pvt Ltd

Noting that IMTEX 2022 is a fantastic opportunity to get on the physical platform to meet existing and potential customers, particularly in light of the ongoing pandemic, Tushar Pawar, National Head, AMPCO METAL India Pvt Ltd, stressed that industry experts, engineers, and high-level delegates from public and private sectors will be present for IMTEX. To make the most of its presence at IMTEX, the company is to showcase its wide range of offerings for the Metal Forming industry, such as tube bending tools, tube forming + welding rolls, deep drawing dies, high wear-resistant parts, resistance welding electrodes, etc. It has developed an in-house capacity to design, supply, and prove the tube bending die set.

The company is launching its Tube Bending tooling sets at IMTEX, catering to tube bending machine manufacturers and users in the Aerospace industry, exhaust tube manufacturers,

hygienic tube producers, furniture manufacturers, etc.



Source: AMPCO METAL India Pvt Ltd

## Bystronic Laser India Pvt Ltd

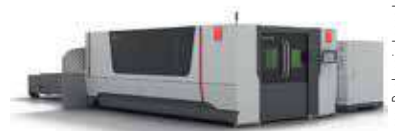
Hall 4 | Booth B104



**Niranjan R Manjrekar**  
Managing Director  
Bystronic Laser India Pvt Ltd

According to Niranjan R Manjrekar, Managing Director, Bystronic Laser India Pvt Ltd, IMTEX has always been the launchpad for showcasing the latest technologies and product novelties. He shared that the company is excited to launch its new bending product and demonstrate the laser with an added advantage. It is looking forward to reaching out to the quality-conscious market for a better product offering with an optimized ownership cost.

ByBend Smart Press Brake machine, loaded with smart features, will cater to the company's premium customers. "BySmart Laser will be demonstrated with new features and novelties, adding advantages to its existence for profitability and versatility," he added.



Source: Bystronic Laser India Pvt Ltd

# IPG Revolutionizes **E-Mobility**

## EV BATTERY PACK MANUFACTURING

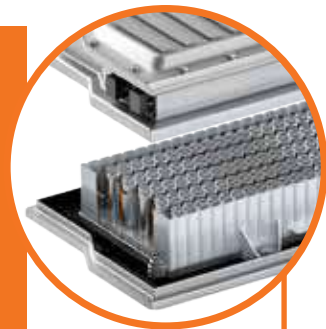
**IPG SOLUTION:** Complete integrated systems that handle, fixture, weld, test and assemble battery packs

### CELLS TO MODULES TO PACKS

- Robotic component handling with barcode tracking
- Individual cell testing and module fixturing
- Busbars welded and assembled with cells
- Modules tested and reworked as needed
- Aluminum or steel enclosures welded into battery packs

### LASER WELDING AND MONITORING

- >10 cells processed per second
- AMB lasers eliminate spatter with on-the-fly precision beam tuning
- Scan heads for consistent, reliable, high-quality cell to busbar welds
- Wobble welding for high-speed battery enclosure welding
- Inline process monitoring for real-time quality assurance to reduce defects

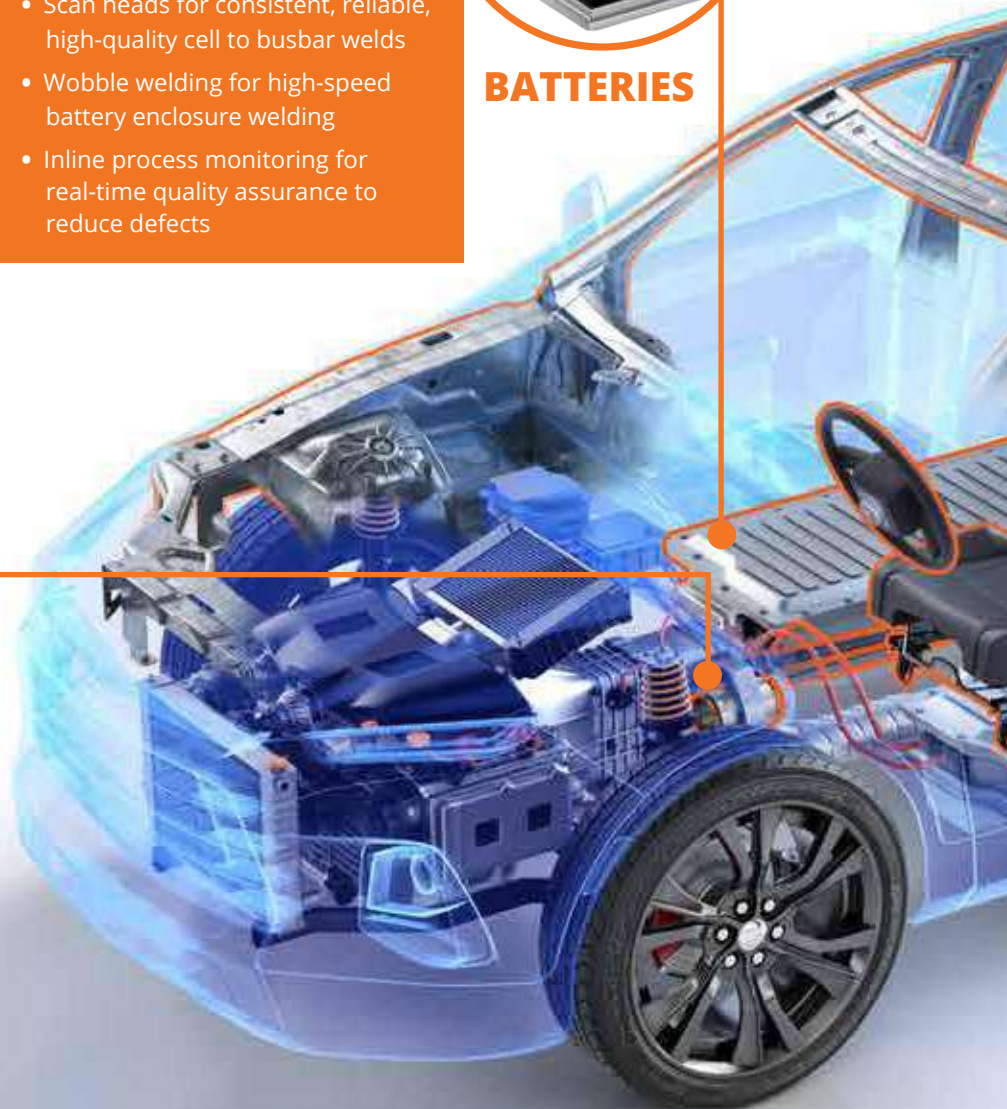
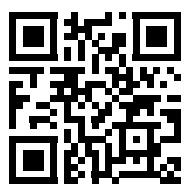


### BATTERIES



### ELECTRIC MOTORS

LEARN MORE



# Applications

## VISIT US:

**IMTEX 2022**  
**HALL # 4 BOOTH # C101**  
**VENUE - BIEC, BENGALURU**  
**DATES - JUNE 16 - 21, 2022**

## EV Battery Welding Solutions

### ADJUSTABLE MODE BEAM (AMB) LASERS

- Spatter reduction on EV batteries for **improved reliability and safety**
- **Superior welding quality** of challenging dissimilar materials
- **Faster, more uniform high-speed welding**



### HIGH POWER SCAN HEADS

- **Consistent, precise, high-speed** welding of cells to bus bars
- **High strength welds** with **no seal damage**
- **Consistent** penetration depth



### INLINE WELD MONITORING

- In-weld real-time monitoring and control for **optimal battery welds**
- **Eliminates the need** for destructive testing
- **Reduces scrap and increases overall throughput**
- **Identifies problems before processing begins**



## Carl Zeiss India (Bangalore) Pvt Ltd

Hall 3A | Booth D102

Source: Carl Zeiss India (Bangalore) Pvt Ltd



**Manoj K Sundaram**  
Head, Business Development  
Carl Zeiss India (Bangalore)

Manoj K Sundaram, Head, Business Development, Carl Zeiss India (Bangalore) Pvt Ltd, believes that IMTEX is one of the biggest platforms for the Manufacturing industry in India. He spoke of the company's launch of three new products at IMTEX - a new compact X-Ray CT system METROTOM 1, focusing on the Plastic industry; a wide range Roughness and Contour measurement system SURFCOM NEX SD2 for the Bearing and Aerospace industry; and a NEW CONTURA CMM.

The company will also display its Microscopes, Optical, and Roughness stations. "STEMI 305 for visual inspection, AxiImager M2m for particle analysis, Smartzoom 5 for advanced failure analysis, and quick documentation from the microscopy vertical. Our portable roughness machines SURFCOM Touch 50 and Handysurf + will be on display. With

Form metrology gaining ground again, the CNC Roundness Measuring Machine RONDCOM NEX 200 will be showcased," shared Sundaram.

"On the VMM, we have O-DETECT, a video measurement system with ISO standard traceability specifications. Blue light scanning will be displayed through the 3D scanner ATOS Q, focusing on reverse engineering, inspection, and 3D modeling. So, an all-around portfolio will be on display from ZEISS," he added.



Source: Carl Zeiss India (Bangalore) Pvt Ltd

## Fenwick and Ravi

Hall 3A | Booth A115

Source: Fenwick and Ravi



**Anirudh Ravi**  
Business Development  
Fenwick and Ravi

The primary products of Fenwick and Ravi, which has its headquarters in Bangalore, are the Steady Rest, Barfeeder, Angle Milling Head, and Zero Point Clamping System. It also has a Project Division, which has assisted it in executing numerous projects, primarily for Indian Defence as a secondary manufacturer.

"Ever since the pandemic disrupted the entire economy, participating in exhibitions and, more importantly, meeting customers is the need of the hour to gain traction," said Anirudh Ravi, Business Development, Fenwick and Ravi. "This is the first IMTEX since then, so we expect a good footfall of visitors this time. Our focus for IMTEX FORMING 2022 is to meet our existing customers and prospective new customers."

Speaking of the product showcase at IMTEX, he shared, "We are entering the field of special turnkey solutions for customers in the areas of Automation, Material Handling, and Hydraulic Subsystems. These are the areas we will focus on during IMTEX 2022."



Source: Fenwick and Ravi

## Grind Master Machines Pvt Ltd

Hall 2A | Booth B116

Source: Grind Master Machines Pvt Ltd



**Mohini Kelkar**  
Director, Business Development  
Grind Master Machines Pvt Ltd

Mohini Kelkar, Director, Business Development, Grind Master Machines Pvt Ltd, shared her excitement to be part of IMTEX. "The show is happening in the physical form after more than two years now and so. We expect similar enthusiasm from our customers. The Indian industry is on a high-growth path, so capital investments are happening in a big way, which is favorable for all machine tool companies."

Speaking on the 'AatmaNirbhar Bharat Pavilion', she stated, "Here companies will showcase the import substitute technologies, machines, and components that the Indian machine tool makers offer. These offerings play a crucial role in making the Indian manufacturer 'AatmaNirbhar'. Collective presentation of these will positively impact customers and PSUs who are mandated to source from India but are not sure of a reliable source."

"At our IMTEX booth, we will showcase various techniques of Sheet Metal Deburring. Depending on the burr level, we select the right deburring process and the right machine accordingly. It is indeed essential to select the process," she added.



Source: Grind Master Machines Pvt Ltd

# MARPOSS

BRANKAMP

## MONITORING SOLUTIONS FOR SMART FORMING



TOOL PROTECTION

BIG DATA ANALYSIS

PROCESS  
OPTIMISATION

PRODUCTIVITY  
INCREASE

QUALITY  
CONTROL

SET UP AIDE

MACHINE PROTECTION



International Forming Technology Exhibition

16 - 21, June, 2022,  
Bangalore

VISIT US  
Hall 3A - Stall B103

## Imaginarium Solutions (I) Pvt Ltd

Hall 3A | Booth E112



**Samkitt Shah**  
Business Head  
Imaginarium Solutions

Samkitt Shah, Business Head, Imaginarium Solutions, expects India to be in the top ten within two years of production due to global demand. He noted, "There are two aspects to participation at IMTEX this year. The first and most important one is to create awareness and importance of Additive Manufacturing, prototyping, and manufacturing end-use parts in today's fast-growing development cycles. The second is to identify and converse with professionals wanting to learn or use our products and services and see how we can help them in their applications."

He further commented, "We leverage our expertise and experience to provide holistic and end-to-end metal and polymer 3D Printing solutions in the Desktop and Industrial Space from our world-renowned partners, including GE Additive, Formlabs, Ultimaker, Raise 3D, Builder3D, and many more. With over 15 years of experience in computer-aided manufacturing,

Imaginarium has always been a user of technology first. Having used 3D printers consistently, we understand how different printers from our global partners can boost manufacturing workflow and save costs and time." He shared, "We will be exhibiting Solutions, an arm of Imaginarium with global partners, to bring you the best 3D Printing for maximum business impact. We deliver a perfect blend of 3D Printers, materials, and application expertise designed for functional prototypes, complex designs, and production components. Our experts would assist in selecting the ideal solution, even for the most intricate design and production challenges."



## IPG Photonics (India) Pvt Ltd

Hall 4 | Booth C101



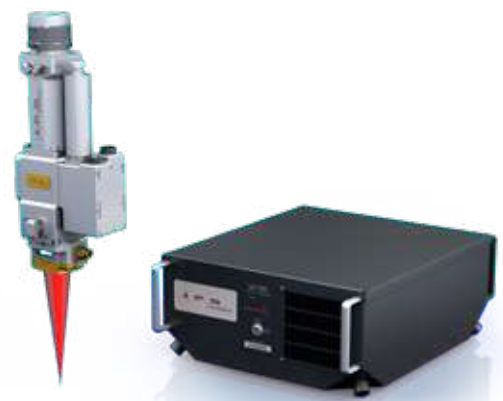
**Rajesh Sharma**  
General Manager  
IPG Photonics (India)

Rajesh Sharma, General Manager, IPG Photonics (India), cited IMTEX 2022 as an excellent platform for the company to enlighten people and propagate the message of fiber lasers replacing conventional methods. He said the gamut of industries exhibiting at this show in the forming segment will be enriched by the work fiber lasers can do.

"We will be focusing on all major applications during this show. IPG Photonics has always been the front-runner in bringing technological revolution, and this time it won't be different. We commit to delivering the best solution for every organization through our fiber lasers, process heads, and other beam delivery products and quality enhancement solutions," he shared.

The company will introduce the LightWELD 1500 XC, a combined Handheld Laser Welding and Cleaning System. It is an extended version of the recently launched LightWELD 1500, which was meant only for hand-held welding applications. LightWELD XC expands the welding capabilities of LightWELD with cleaning modes to remove oils, rust, and coatings quickly and easily before welding and remove debris and discoloration after welding.

He added, "We can also anticipate a surge in battery welding applications in the Electric Vehicle sector. IPG India is showcasing its entire solution range for this application to address this. We have the AMB lasers with a Core and Ring feature for spatter-free, high-quality welding along with our Process Heads. This solution has been advanced by the introduction of our Inline Weld Monitoring System, i.e., LDD 700, which is a real-time, non-destructive system for measuring weld quality."





**Make it possible**

**Block Your Dates**



International Forming Technology Exhibition



International Exhibition of Dies & Moulds, Forming Tools,  
Machine Accessories, Metrology and CAD / CAM

Concurrent shows



International Exhibition on  
Industry 4.0 & Additive Manufacturing

**16 - 21 June 2022, Bengaluru**

- ▶ 33,000 Sq.mts of exhibition space
- ▶ Over 16 Country Participation
- ▶ Witness live technologies
- ▶ 3 Exhibition halls
- ▶ 350+ Exhibitors
- ▶ Academia Pavilion



Entry for only Fully Vaccinated (2 Doses)

**REGISTER TODAY**

Wearing Mask Mandatory | Sanitize Hands Regularly | Maintain Social Distance

Organiser



Venue



Exhibition Timings: 10:00 hrs to 18:00 hrs | Visitors below 18 years of age are not allowed

[www.imtex.in](http://www.imtex.in)

Follow us on    

## Materialise SDN BHD (Malaysia)

Hall 3A | Booth E106



**Avinash Abraham**  
Account Manager  
Materialise India

To get the most out of IMTEX FORMING 2022, Avinash Abraham, Account Manager, Materialise India, shared that he was looking forward to meeting new prospects, learning about current market trends, and discovering the latest innovations in the field of advanced manufacturing.

He shared the technologies that will be on display at the company booth, Materialise Software Solution for Additive Manufacturing; Materialise Control Platform (MCP), a machine-embedded hardware- and software-driven platform for advanced control of laser-based 3D printing processes; Materialise AM, a native enterprise platform that enables repeatability and greater connectivity in the production; and Materialise Magics 3D Print Suite.



## Meiban Engineering Technologies Pvt Ltd

Hall 2A | Booth B110



**AV Srinivasan**  
CEO  
Meiban Engineering  
Technologies Pvt Ltd

AV Srinivasan, CEO, Meiban Engineering Technologies Pvt Ltd, remarked, "We believe IMTEX 2022 will give us a great platform to showcase our new technologies and meet our users and potential customers. Many customers have also been waiting for one-on-one interaction on the new technologies available."

"We are displaying our AC Servo Press Brake BB6020 (Oil-free) for the first time in India, best suitable for medium to high-volume and high-precision parts, along with Muratec 20-ton high-end AC Servo Turret Punch Press Motorum 2048TS. We expect IMTEX 2022 to give us a great opportunity to meet our target industry customers.

It will also provide us a great platform for understanding customers' needs after the pandemic," he shared.



## Sahajanand Laser Technology Ltd

Hall 4 | Booth B108



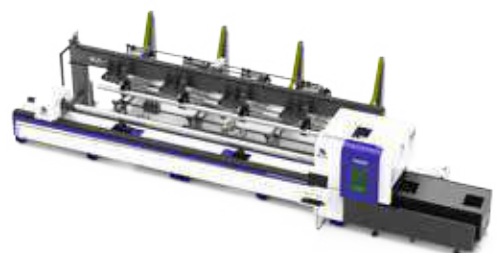
**Maulik Patel**  
Executive Director  
SLTL Group

Veteran participant of the show, Maulik Patel, Executive Director, SLTL Group, shared, "IMTEX is a prestigious metal forming show, which opens many doors for the machine tool and tech community. We hope to use this platform to give our visitors a first-hand experience of our laser systems. We will be making big announcements and launches at IMTEX 2022. We have always innovated to help industry and fabricators achieve high application standards and that its laser systems meet customers' complex needs."

One of the company's launches at the show is an enhanced model of a dedicated Laser Tube Cutting System, T-6300, powered with AI. "The system is a unique combination of SLTL Group's proprietary Laser Technology and a robust mechanical structure designed by the in-house R&D team. We are also showcasing the latest solutions and systems for the EV market that would facilitate the automotive industry to scale new heights.

Our semi-automatic and fully automated solutions for laser welding applications will also be featured. These have been developed to address the challenges of the EV sector," he added.

From its Akhar series, the company will be showcasing the NEO-Fiber Laser Marking Machine, designed to mark or engrave the desired shape, size, design, pattern, image, code, or any other traceability solution or data. Its laser cleaning machine, an environment-friendly application solution, will also be on display.





THE FACT OF THE MATTER IS...

# VERICUT FORCE INCREASES PROFITS

- Safely decrease cycle times -
- Extend cutting tool life up to **2x or more** -
- Increase machine life & ROI -
- Improve part quality & profitability -

**CREATE SAFER & MORE  
EFFICIENT TOOLPATHS!**

Calculate your own Force savings at:  
[cgtech.co.in/force-calculator](http://cgtech.co.in/force-calculator)

Office: 9108404780 • [info.india@cgtech.com](mailto:info.india@cgtech.com)

**OPTIMIZE - SAVE - EVERY TIME**

# CHANGING MEDICAL IMPLANTS

Additive manufacturing provides new ways of making medical implants, but its impact is greater than this.



Source: Modern Machine Shop

Moving from cast and machined knee implants (left) to metal 3D printed ones (center, right) has allowed Amplify Additive to implement new design features like trabecular lattice and prove out designs more quickly.

**A**dditive manufacturing (AM) has been used to make medical implants for more than a decade now. 3D printing technology has allowed implant manufacturers to create complex geometries that copy the shape and function of natural bone and to produce these items on an accelerated timeline.

But additive manufacturing's role in the medical field continues to develop and mature. In a recent issue of Additive Manufacturing magazine, we highlighted a number of 3D printed implant applications, ranging from devices used in successful, completed surgeries to research that will influence the next generation of medical devices. Our reporting shows that 3D printing is not just an alternative method for manufacturing hip cups and spine cages at

scale; it is actually reshaping what implants can do and how patients can be treated.

Here are four ways that 3D printing is changing medical implants:

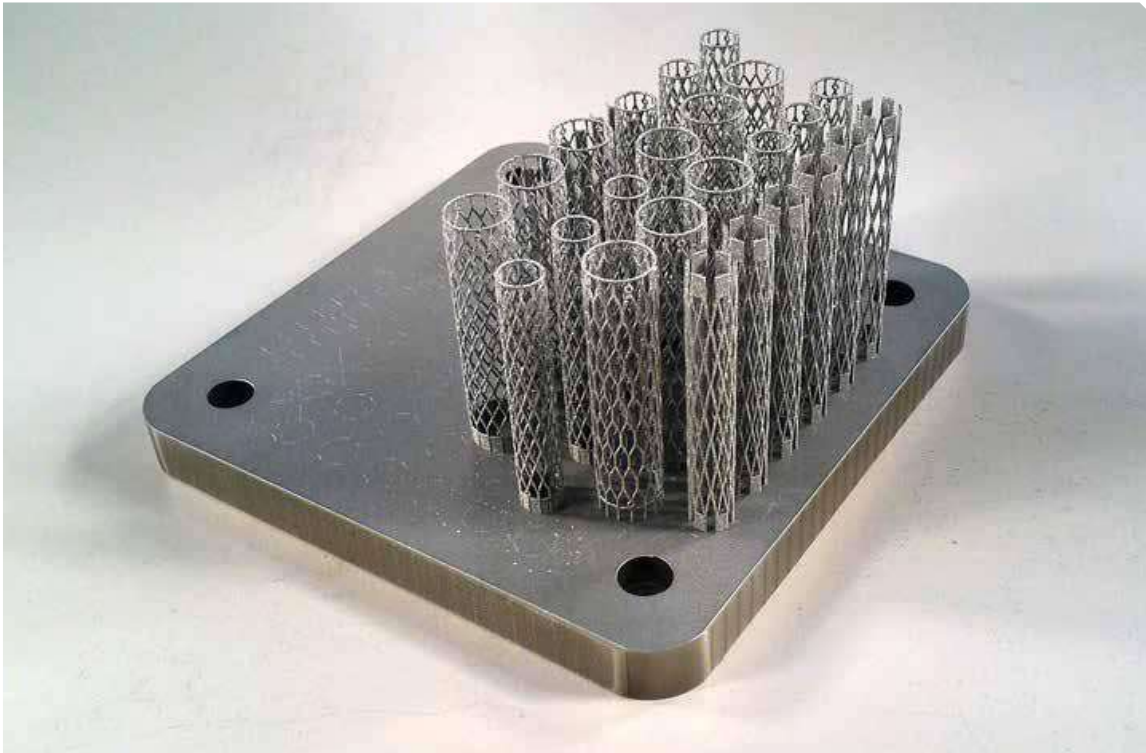
**Accelerating product development.** 3D printing allows for the creation of new kinds of geometries, such as trabecular lattices to encourage bone in-growth on a given implant. The technology offers not only the capability to create and test these geometries, but to prototype them using the intended manufacturing process and to do so quickly. When the right design is found, the implant can go into production right away. As Ryan Hanes, VP of business development at implant maker Amplify Additive says, with additive, 'the prototype is the product'.

**Making custom implants more accessible.** Rapid product development leads to another advantage with 3D printing technology: Custom implants can likewise be developed and made much more quickly. Patients can have access to implants made to fit their bodies, resulting in easier surgeries and better health outcomes. Surgeons at the University of Miami recently created a 3D printed titanium talus bone for a patient with sickle cell disease, for example. Rather than fusing the patient's ankle to the hindfoot, a procedure that would have taken away her ability to move the foot, this replacement talus was able to preserve that mobility.

**Creating new opportunities with biocompatible materials.** 3D printing technology offers new ways of working with

STEPHANIE HENDRIXSON  
Contributing Editor  
Modern Machine Shop  
shendrixson@  
mmsonline.com






Source: CSIRO

The ability to 3D print with nitinol will allow stents like these to be made in greater varieties to suit more patients.

common implant materials. Researchers in Australia have proven a process for the 3D printing of stents made from nitinol, a shape memory alloy that will resume its intended geometry after deformation; the material is already used for arterial stents, but the ability to apply it

with 3D printing could enable more sizes and configurations to be made easily. Polymers and other materials can benefit from additive manufacturing as well; bioceramics used as support structures and artificial bone graft can be 3D printed into precise geometries to fit a patient's anat-

omy, for example, rather than having to be packed manually by the surgeon.

**Simplifying procedures.** The ability to create custom implants for specific patients has added benefits during the course of treatment. Many reconstructive procedures still require a fair amount of handwork and artistry on the part of the surgeon. But working with a bespoke implant made for the patient at hand means that the surgeon has less adjustment and manual work to do in the operating room. Procedures can be accomplished faster and less invasively; patients, therefore, recover more quickly and have better health outcomes. 3D printed implants could even reduce the number of surgeries necessary for a given condition. For example, glaucoma stents 3D printed from a dissolvable polymer could eliminate the follow-up surgery necessary to remove the titanium devices commonly used today. 

Many reconstructive procedures still require a fair amount of handwork and artistry on the part of the surgeon. But working with a bespoke implant made for the patient at hand means that the surgeon has less adjustment and manual work to do in the operating room.



Source: BMF

This glaucoma stent is about 1 mm long, and was built using microscale 3D printing by Boston Micro Fabrication (BMF).

# ROOTED IN LEGACY

As a trusted partner in metal alloy solutions, AMPCO METAL has assisted clients in resolving technical issues with highly engineered alloys made from readily available materials. With a legacy and a strong portfolio that differentiates it from its counterparts, the company is all set for tremendous growth in the coming years.

**S**ince 1914, AMPCO METAL has collaborated with industry partners from various market segments to develop solutions for a range of applications, including friction and wear resistance, corrosion resistance, and heat and electrical conductivity. AMPCO METAL INDIA PVT LTD, a wholly-owned subsidiary of AMPCOMETAL SA, headquartered in Switzerland, began operations in Pune in 2012. It now serves customers in India for niche applications such as tube bending toolings, tube forming rolls, and material for deep drawing dies end form-

ing punches in the Forming industry. It is an ISO 9001:2015 certified company with a warehouse and service center in Chakan, Pune, where materials are stocked according to customer needs. Sharing more about the company, Tushar Pawar, National Head, AMPCO METAL INDIA PVT LTD, says, "Our state-of-the-art facility at Pune includes a fleet of CNC turning centers and vertical machining centers, turn-mill machines, wire cutting machines, a heat treatment facility, automatic sawing machines, along with conventional lathes and milling machines for preci-

sion components manufacturing. We are also equipped with CMM (Coordinate Measuring Machine) and other sophisticated inspection equipment for critical measurement and quality control."

**Drawing on the expertise**  
For over a century, AMPCO METAL has pioneered and produced the 'best metal solutions' for the world's products, applications, and industries. A manufacturer of specialty copper alloys under the brand names AMPCO® and AMP-COLOY® and a forerunner in developing aluminum bronze

SOVAN TUDU  
Sub-Editor  
Magic Wand Media Inc  
Sovan.tudu@  
magicwandmedia.in



Source: AMPCO METAL INDIA PVT LTD

alloys, the company continues to engineer premium products for critical applications with its well-known AMPCO® product line to this day. Its high-quality, high-property, and uniquely hard metal range is trusted worldwide for its broad use.

“AMPCO® Aluminum Bronze extends to food-approved applications through alloys such as AMPCO® 8, AMPCO® 18, and AMPCO® M4,” adds Pawar. “Our high hardness materials AMPCO® 21, AMPCO® 22, and AMPCO® 25 are used where high compressive forces are in play and critical for the end product’s quality.” In addition, AMPCOLOY® High Copper alloys are engineered with exceptional conductivity, high strength, and unique wear characteristics, delivering higher lifetime, quality, and performance with cleaner trace elements. These materials are used in critical applications that require both conductivi-



Source: AMPCO METAL INDIA PVT LTD

“Looking at the current international situation, we must work on the success of ‘Aatmanirbhar Bharat’. The industries around the world depend on the automotive industry, and the Indian automotive industry has grown to become one of the largest in the world among all the segments. Looking at all the above scenarios, India has a great business opportunity in the coming days.”

**Tushar Pawar**  
National Head  
AMPCO METAL INDIA PVT LTD

ty and mechanical properties, such as plastic molds and resistance welding.

### Competitive advantage

AMPCO METAL produces high-performance aluminum bronze with a patented technology known as MICROCAST®. This manufacturing process, which is based on the exclusive magnetic steering (Magneto-Hydro-Dynamic) at the casting furnace, produces extremely fine grain and uniform microstructure, promoting excellent dispersion of the alloy chemical elements for consistency, quality, and durability.

Pawar explains, “Through our patented production process, AMPCO® M4 has mechanical properties far beyond the range of conventional commercial Nickel-Aluminum bronzes. The increase in the Al and Fe content in the alloy results in a material in which the hard gamma 2 phase is present. By expert metallurgical control, this hard constituent is uniformly distributed, giving the alloy its unique perfor-

**A manufacturer of specialty copper alloys under the brand names AMPCO® and AMPCOLOY®, and a forerunner in developing aluminum bronze alloys, the company continues to engineer premium products for critical applications with its well-known AMPCO® product line to this day.**



Source: AMPCO METAL INDIA PVT LTD

Machining Facility

**AMPCO® M4 is best suited for higher technical properties at elevated temperatures and corrosion resistance. It is also ideal for gear bearings and bushings, bending dies (shoes and mandrels) for the tube bending industry, gear wheels, and wear/guide plates.**

mance qualities and the ability to resist wear.”

AMPCO® M4 is best suited for higher technical properties at elevated temperatures and corrosion resistance. It is also ideal for gear bearings and bushings, bending dies (shoes and mandrels) for the Tube Bending industry, gear wheels, and wear/guide plates.

### **Tapping the opportunity**

AMPCO METAL serves customers in the Aerospace, Automotive, General Engineering, Marine, Metal Processing, Oil & Gas, Chemical, Plastic Processing, Resistance Welding, and Steel Mill industries. Sensing prospects in the country, he confirms, “Yes, there are a lot of opportunities in the Indian market. The current global scenario has provided a golden opportunity for Indian industries. ‘Make in India’ strategy is a great opportunity for us. We must act on it and grab it.”

He further states, “Looking at the current international situation, we must work on

“Understanding that specific applications require a specific tool, AMPCO METAL offers a range of unequalled performance alloys that are used as forming rolls, tube holding rolls, tube bending tools, and deep drawing dies in the production of stainless steel and titanium tubes and parts. These solutions from AMPCO METAL offer great benefits to customers.”

**Tushar Pawar**  
National Head  
AMPCO METAL INDIA PVT LTD

the success of ‘Aatmanirbhar Bharat’. The industries around the world depend on the Automotive industry, and the Indian Automotive industry has grown to become one of the largest in the world among all the segments. Looking at all the above scenarios, India has a great business opportunity in the coming days.”

### **Showcasing versatility**

To further extend its reach, the company plans to introduce Tube Bending tooling sets as a new product at

the forthcoming International Machine Tool & Manufacturing Technology Exhibition (IMTEX). It has developed in-house capabilities for designing, supplying, and testing the tube bending die set. “This is exciting news for tube bending machine manufacturers and users in the Aerospace industry, exhaust tube manufacturers, hygienic tube producers, furniture manufacturers, etc. All the tube benders always seek lower cost-per-bend, and AMPCO METAL ensures the same. AMPCO® Tube Bending tooling greatly benefits tube bending of stainless steel and titanium tubes. It increases the product quality and life of the production tooling,” shares Pawar.

Emphasizing that IMTEX FORMING is one of the most notable exhibitions in India to explore and connect with the audience, he states, “It is the point of contact to connect with the entire industry in India and plays a critical role in the development of the metal forming industry.”



Source: AMPCO METAL INDIA PVT LTD

AMPCO® Wear Resistant Components

Source: AMPCO METAL INDIA PVT LTD




Tube Bending Consumables

Looking forward to leveraging the expo, he mentions, "Creative engineers worldwide choose AMPCO® Bronze alloys to broaden their manufacturing options when forming high-value materials such as stainless steel or low carbon steel, titanium, and other exotic materials. And IMTEX FORMING helps AMPCO METAL to demon-

strate such solutions to the potential users and find opportunities in the applications which are new and challenging." He continues, "AMPCO METAL's solutions are a real game-changer for the Forming industry. We will be showcasing a range of tube bending tools, tube forming and welding rolls, deep drawing dies, high-wear resistant parts, resistance welding electrodes, etc."

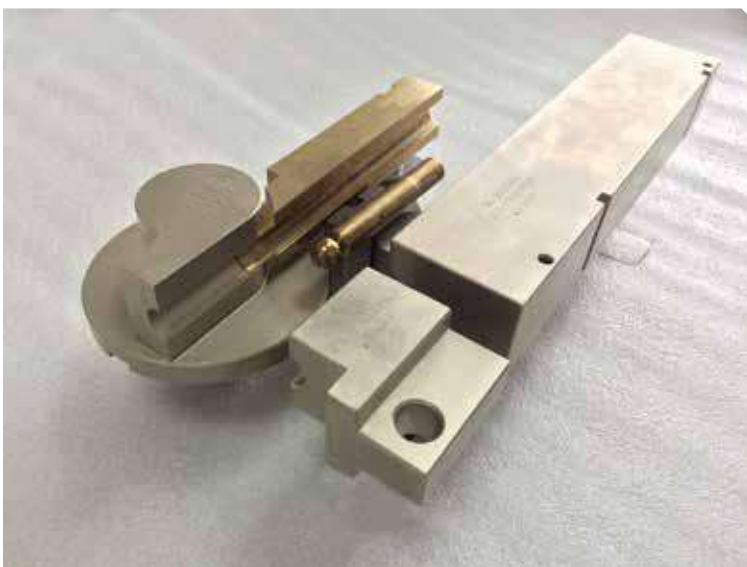
### Envisioning growth

With its experience and technical competence, the company is strengthening its position as a dependable partner in creating metal solutions for its customers. With the help of its teams of highly-specialized experts in specific fields, AMPCO METAL consults directly with the customers to help realize their specific material needs.

He further claims, "MICRO-CAST® technology, this intermetallic compound is unique in AMPCO® alloys and differs from commercial aluminum bronzes. This gives AMPCO® alloys a fine and uniform grain size, differentiating them from other standard products. Looking at our strengths, we see tremendous growth in the coming years for our solutions." 

**AMPCOLOY® High Copper alloys are used in critical applications that require both conductivity and mechanical properties, such as plastic molds and resistance welding.**

Source: AMPCO METAL INDIA PVT LTD



Tube Bend Die Set



**AMPCO METAL INDIA PVT LTD**  
Hall 3A, Booth A116  
[www.ampcometal.com](http://www.ampcometal.com)

# MAKING THINGS VISIBLE

With Drishti's analytics, HELLA, a tier-one automotive supplier, could increase throughput, reduce cycle times, improve employee ergonomics, and achieve a return on investment in under six months.



Source: Drishti

**D**rishti Technologies, Inc (Drishti), whose AI-powered manufacturing technology uses video analytics, data, and insights to bring significant benefits to manufacturers and their employees, and HELLA (FRA:HLE), a tier-one automotive supplier, have gotten together again to further increase operational efficiency with a second successful combined project in Dhankot, India. HELLA is an internationally positioned automotive supplier, globally recognized for its lean practices and is committed to investing in the latest technologies to drive human productivity and improve manufacturing outcomes.

## Making discoveries

With Drishti cameras and streaming video analysis enabled on one of HELLA's sensor product lines,

the HELLA team made a series of previously concealed discoveries. First, the massive volume of cycle time data available from Drishti quickly revealed slowdowns in stations that were not originally the focus of improvement efforts. Second, by watching video footage from the identified station, the team understood that the physical station configuration was slowing down the line associates.

The station setup was also causing ergonomic concerns. As the line associate was reaching with his right arm across to the left side of the station, each cycle required a twisting motion that led to fatigue.

"Because our focus had been on the station, which we thought was the bottleneck, we had overlooked this potential for slowdowns and fatigue," said Ram

Singh Khangarote, Operational Excellence and Operation Product Manager, HELLA Dhankot. "Within a few minutes of viewing the video footage from Drishti, our team had ideas to reconfigure the station to make it more comfortable for the line associates, thereby shortening every cycle time. And most importantly, our line associates are healthier, happier, and more productive."

Finally, with Drishti, because the team in Dhankot learned the true cause of line slowdowns, they were able to improve line balancing. The Drishti investment paid for itself in less than six months.

## Goals that complement

"This is the second instance of finding significant improvement opportunities using Drishti. In 2020, we reduced cycle times in

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



**WE STAND FOR  
RELIABILITY  
PROXIMITY  
COMPETENCY**

**Standard Parts  
for Die &  
Mould Making**



**Rotary Tables  
for Machine Tools &  
Automation  
Systems**



**Drishti streams video at every station on a line, then uses proprietary AI networks to translate video streams into data, a technique called action recognition.**



Source: Drishti

“Within a few minutes of viewing the video footage from Drishti, our team had ideas to reconfigure the station to make it more comfortable for the line associates, thereby shortening every cycle time. And most importantly, our line associates are healthier, happier, and more productive.”

**Ram Singh Khangarote**  
Operational Excellence and  
Operation Product Manager  
HELLA Dhankot

our Guanajuato, Mexico plant. Now we’re seeing value in Dhankot as well,” said Huri Mendoza, Head of Operational Excellence, HELLA. “Drishti’s technology perfectly complements our goal of achieving operational excellence by augmenting our extremely capable workforce and empowering them with the tools they need to perform their jobs even better.” The Dhankot plant deployment is one of several ongoing collaborations between HELLA and Drishti. Drishti streams video at every station on a line, then uses proprietary AI networks to



Source: Drishti

“Drishti’s technology perfectly complements our goal of achieving operational excellence by augmenting our extremely capable workforce and empowering them with the tools they need to perform their jobs even better.”

**Huri Mendoza**  
Head of Operational Excellence  
HELLA

translate video streams into data, a technique called action recognition. The line-level data on cycles and actions helps manufacturers improve productivity and quality while improving standardized work adherence.

“Drishti’s action recognition technology provides manufacturers with a clear competitive edge, as they can see improvement opportunities on assembly lines that are otherwise hidden,” said Gary Jackson, CEO, Drishti. “HELLA’s success with Drishti is in line with what we’re seeing across the automotive industry, as well as



Source: Drishti

“HELLA’s success with Drishti is in line with what we’re seeing across the automotive industry, as well as in other verticals like electronics and medical devices. The future of automated video analysis, which creates insights on people at work, runs through Drishti.”

**Gary Jackson**  
CEO  
Drishti

in other verticals like electronics and medical devices. The future of automated video analysis, which creates insights on people at work, runs through Drishti.”

### Issues revealed with Drishti cameras and streaming video analysis

- The massive volume of cycle time data available from Drishti quickly revealed slowdowns in stations.
- The video footage showed that the physical station configuration was slowing down the line associates.
- The station setup was causing ergonomic concerns too.

### Problem resolved

- The HELLA team at Dhankot then reconfigured the station to make it more comfortable for the line associates, shortening every cycle time.
- They were able to improve line balancing.
- The Drishti investment paid for itself in less than six months.



Source: Drishti



# HANN KUEN MACHINERY

**HARDY**



Servo Type Drilling / Tapping Spindle Head Unit



Built-in Motor Facing Head Unit - Flange Type



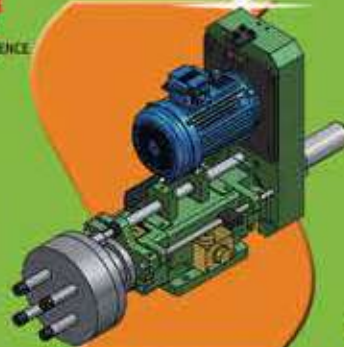
Built-in Motor Drilling/Tapping Spindle with ATC and Center Coolant



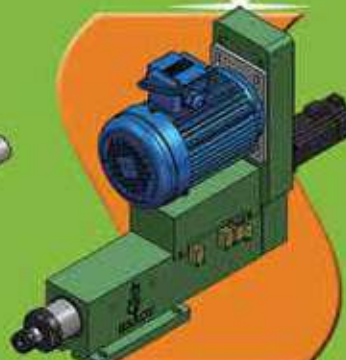
Built-in Motor Spindle Unit



Boring/Milling Head Unit with ATC



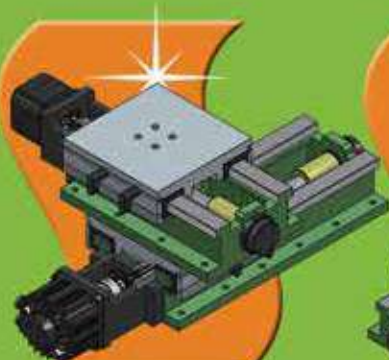
Multi-Spindle Head



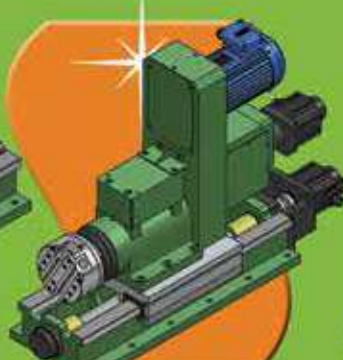
Servo Type Drilling / Tapping Spindle Head



Tapping Spindle Head



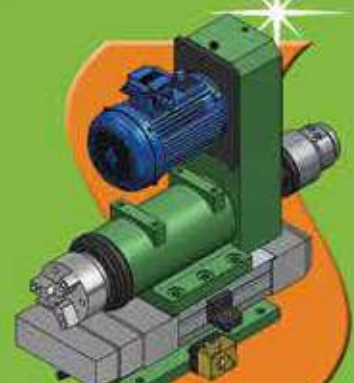
XY Servo Hardness Slide Unit



Servo Facing Head + Servo Ball Screw Slide Unit



XYZ Servo Slide Table + Milling Head



3-Jaw Chuck Spindle + Slide Unit



**HARDY**

HANN KUEN MACHINERY & HARDWARE CO., LTD.  
NO. 22, Liou Shun Rd., East District, Taichung City 401, Taiwan  
TEL: +886-4-2486-0602 FAX: +886-4-2486-0605  
E-mail: hann.kuen@hardy.com.tw  
<https://www.hardy-tw.com> Skype: hann.kuen





Source: Anand Engineers Pvt Ltd

SACHIN KUMBHAR  
R&D Manager  
Anand Engineers Pvt Ltd  
sachin.kumbhar@  
molygraph.com



JOEL KANDATHIL  
R&D Chemist  
Anand Engineers Pvt Ltd  
joel@molygraph.com



## BRINGING GEAR OILS TO THE TEST

An exposition on the importance of gear oils to prevent damage and failure in gearboxes, the challenges encountered in their use, and the various tests they must be put through to prove their effectiveness...

**G**ear or gearbox is an assembly of mechanical parts like toothed wheels and shafts used for transmitting the energy of rotational motion while altering the associated parameters like speed, the direction of rotation, and torque.

Gear oil is a lubricating oil used for reducing the friction and wear of the gear tooth surfaces in the gearbox. It helps in the dissipation of the heat generated by operating the gear and also in the protection of gear parts against corrosion. They form a protective layer on

the surface of gears and bearings, thus preventing damage and failure.

### **Challenges in gear lubrication**

Typical challenges in the lubrication of gearboxes are quite different from those of other

# Would you like to be crowned a Productivity Champion?

..... Share your success stories on  
**PRODUCTIVITY | TECHNOLOGY | INNOVATION....**



Win Cash Awards upto  
**₹10,00,000**



## IMTMA - ACE MICROMATIC Productivity Championship Awards 2022

*"Showcasing Excellence in Manufacturing"*

No Entry Fee

Special stream for Micro & Small Enterprises

Productivity Champions will be crowned at  
**National Productivity Summit 2022**  
18 - 19 November 2022, Bangalore

Rush your  
entries by  
30 June 2022

For more details, contact :

Mr. Abhishek : +91 9844294387 | Mr. Madan : +91 7899437625

Email : abhishek@imtma.in | madan@imtma.in

[www.productivity.imtma.in](http://www.productivity.imtma.in)

ORGANISED BY



Indian Machine  
Tool Manufacturers' Association

AWARDS SPONSOR

**AceMicromatic**  
Group

machines. While the moving surfaces in other machines are either in sliding or rolling motion, in the case of a gear assembly, both these movements are present simultaneously. Moreover, industrial gearboxes operate under harsh conditions of high temperature and heavy loads. The environment also consists of dust, humidity, and exposure to water, chemicals, steam, etc. This is more prominent for open gearbox applications in industries such as Cement, Steel, and Wind Turbine. Lack of proper lubrication (in terms of adequate frequency, quantity, and chemical properties) can lead to excess wear and damage to the gearbox and associated components like bearings and shafts. This reduces the overall performance of the assembly and, in the worst-case scenario, can lead to the breakdown of the manufacturing process, causing heavy losses.

### Types of gear oils

Industrial gear oils are classified as per ANSI/AGMA (American National Standard

Institute/American Gears Manufacturers Association) standards into four classes, as illustrated below:

**R&O Gear Oil** - It is prepared with rust and oxidation (R&O) inhibitors as additives and is supplied as a multi-purpose oil for various applications.

Rust-preventive gear oils are petroleum- or mineral-based compounds containing rust inhibitors. These gearbox oils are classified into monograde and multigrade gear oils. Monograde gear oil is intended to be used at specific 'normal' temperatures, whereas multigrade gear oil can be used at warmer or colder 'normal' temperatures.

These oils extend gear life while allowing the gears to operate at high temperatures. They perform best in low-load gearboxes.

**EP Gear Oil** - It contains extreme pressure withstanding agents such as Sulfur, Phosphorus additives and is utilized in more significant quantities than any other form of gear oil. Extreme pressure (EP) gear oils are available with synthetic or mineral bases. They are multigrade and contain rust inhibi-

tors and anti-foaming additives to keep the oils from thickening and losing their cooling capability. Their life is limited because of the additives. They are best suited for gearboxes that operate under high pressure. The increased stress on the gears causes them to wear faster. EP gear oils extend the life of high load-bearing gearboxes.

**Compound Type Gear Oil** - These gear oils are most commonly used to lubricate enclosed worm gear drives, where the solid sliding action of the gear teeth necessitates the introduction of a friction-reducing compound to minimize heat and enhance efficiency. A surface-active substance, such as a fatty or synthetic fatty oil, inhibits sliding wear and provides the lubricity required to reduce sliding wear.

**Synthetic Type Gear Oil** - Synthetic gear oil is a chemical-based gearbox oil. It is composed of polyalphaolefins (PAOs), esters oils, and polyglycols. Synthetic gear oils are multigrade and contain all the preventive additives as part of their composition.

They can operate at very high or low temperatures and keep rust, foaming inside the gearbox, and gear wear at bay. They are used in gearboxes that operate in extreme sub-zero temperatures, wet climates, and dusty or muddy weather.

### Performance characteristics of gear oils and their testing methods

#### Surface characteristics

Sometimes, gearboxes may come into contact with water. They then form an emulsion with water, leading to the formation of scuffs in between the teeth of the gears, thereby damaging them. The ability of gear oils to separate water and resist emulsion is an important characteris-

Typical challenges in the lubrication of gearboxes are quite different from those of other machines. While the moving surfaces in other machines are either in sliding or rolling motion, in the case of a gear assembly, both these movements are present simultaneously.



Demulsibility test (ASTM D 1401) Foaming Test (ASTM D 892)

Source: Anand Engineers Pvt. Ltd

# TUMAKURU MACHINE TOOL PARK

ATTRACTIVELY PRICED READY TO BUILD INDUSTRIAL PLOTS

Machine  
Tools  
All types

Parts  
Accessories  
attachments  
Sub-Systems

Cutting  
Tools  
Tooling

Dies &  
Moulds

Electrical &  
Electronics  
I4.0

Automation

Service  
Providers



- Self contained gated community developed in 530 acres
- Industrial Plots from 0.5 Acre
- High Quality Plug and Play Infrastructure
- Open to Indian and Foreign companies

- Attractively Priced
- Located close to Tumakuru, Karnataka
- 75min from Bangalore, Peenya
- Part of Industrial Corridor node in Tumkur under Chennai - Bengaluru Industrial Corridor (CBIC)

Applications from the prospective and interested entrepreneurs can be submitted online through Karnataka Udyoga Mitra <http://kum.karnataka.gov.in> or <http://ebizkarnataka.gov.in>

For queries please contact Mr. Manjunath.L Chief Marketing Officer, TMTP. Ph: +91 9845525245 Email: [cmo@tmtp.in](mailto:cmo@tmtp.in)



Government of India  
Department of Heavy Industries  
Udyog Bhavan, Rafi Marg,  
New Delhi - 11



Government of Karnataka  
Karnataka Industrial Area Development Board  
(KIADB), No. 49, East Wing, 4th and 5th Floor,  
Khanjia Bhavan, Race Course Road,  
Bangalore - 560 001.



Tumakuru Machine Tool Park (TMTP)  
5th Floor, Khanjia Bhavan, 49,  
Race Course Road, Bangalore - 560001  
Ph: +91-80-22288841-43 E-mail: [tmtp@kiadb.in](mailto:tmtp@kiadb.in)

Visit: [www.tmtp.in](http://www.tmtp.in)

**Gear oils have to withstand harsh environments such as rust, water, and debris to hinder emulsification, foaming, and wear characteristics effect on gears. Of the four broad categories of gear oils, synthetic gear oils are best suited, especially for the demanding applications of open gears.**

Source: Anand Engineers Pvt Ltd



Steel Corrosion Test (ASTM D 665 A and B)

Copper Corrosion Test (ASTM D 130)

tic for applications involving water contamination.

The demulsibility test (ASTM D 1401) was conducted on Molygraph's Ultra Gear Syn 320 synthetic gear oil at 82°C. This oil passes the demulsibility test within 15 minutes. It indicates the extent of the hydrophobicity of the formulated gear oil.

Foaming in the gearboxes is the most frequent complaint that manufacturers come across. Foam does not circulate and reduces the lubricant's effectiveness by accelerating gear wear and overheating.

When tested, Molygraph Ultra Gear Syn 320 shows 0ml foam height in sequence I at 25°C, Sequence II at 93°C and Sequence III at 25°C as per ASTM D 892 test.

#### **Corrosion characteristics**

Oil additives are beneficial in adding certain properties to the oil. But sometimes it is also harmful to the gearboxes. EP additives that contain active sulfur aggressively react with the metal, causing wear and even failure.

Some gearboxes have components made up of steel, bronze, and copper. Steel Corrosion Test (ASTM D 665) and Copper Corrosion Test (ASTM D 130)

are used to determine the corrosion property of the gear oil before conducting trials.

Molygraph's Ultra Gear Syn 320 passes:

- Steel corrosion test (ASTM D 665 A and B) for 24 hours
- Copper corrosion test (ASTM D 130) with 1a rating for 3 hours at 100°C and 1b rating for 24 hours at 100°C.

#### **Wear characteristics**

Anti-wear and load-carrying properties of gear oils are quite important. However, determining it only through a four-ball machine test is not the right approach as extreme pressure additives, which give an 800kg weld load in a four-ball test (i.e., ASTM D 2783), can fail in FZG and FE-8 tests, while extreme pressure additives, providing a 250kg weld load in four-ball testers, can pass FZG and FE-8 tests. This is because sulfur, used as an additive, gives higher weld load points on four ball machines but causes scuffing and pitting in FZG and FE-8 tests.

Moreover, the four-ball wear test (ASTM D-4172) is conducted for 1 hour while FZG is run for 15 min for a minimum of 12 load stages, and the FE-8 test is run for 80 hours, so additives may pass the

four-ball wear test but may fail in the FE-8 and FZG tests.

#### **Why FZG and FE-8 test methods better than the four-ball wear test**

##### **FZG Test (ASTM D 5182):**

ASTM D 5182, A/8.3/90 method is widely used to evaluate the scuffing properties of industrial gear oils.

A-type gears are loaded stepwise in 12 load stages between Hertzian stress of  $P_c = 150$  to  $1800 \text{ N/mm}^2$ . They are operated for 15 min at a pitch line velocity of 8.3 m/s and a starting oil temperature of 90°C in each load stage, under conditions of dip lubrication without cooling. After each load test, scuffing marks are evaluated on the gear flanks. Gear oil must pass load stage 12 (i.e., damage load stage must be more than 12 stages).

In FZG, Molygraph Ultra Gear Syn 320 passes 12 load stages.

##### **FE-8 Test (DIN 51819-3):**

The wear behavior of rolling bearings is examined in the FE-8 wear test according to DIN 51819-3 at an oil temperature of 80°C. In this test, axial cylinder roller bearings of type D are subjected to a speed of  $n=7.5 \text{ min}^{-1}$  with an axial force of  $F_a=80 \text{ kN}$  at a steady-state temperature of 80°C over 80 h. With a  $C/P < 2$ , a very high load is applied. Wear is then determined gravimetrically. Gear oils in the FE-8 wear test, according to DIN 51819-3, have to show roller wear of  $\leq 30 \text{ mg}$  cage wear of  $\leq 200 \text{ mg}$ . Molygraph Ultra Gear Syn 320 clears DIN 51819-3 at a temperature of 80°C.

#### **Molygraph's Ultra Gear Syn 320 gear oil for industrial gears**

Industrial gear oils are expected to work under high temperatures and severe loads and in frequently contaminated settings with dirt, debris, and water. To address

these challenging situations, Molygraph offers a variety of gear oils in various chemistries and viscosities that are specially developed for enclosed gearboxes, one of which is Ultra Gear Syn 320.

**Characteristics of Molygraph Ultra Gear Syn 320:**

- Excellent load-carrying capacity, anti-wear and EP properties
- Extremely low coefficient of friction
- Oxidation resistance at high temperatures
- Extended oil change intervals

**Potential Application areas:**

- A long-life lubricant for gearboxes.
- Low-temperature gearboxes where a smooth start-up is desired.
- Mixer bearings and roll neck bearings operate at high temperatures. Machines such as marine and other centrifuges and oil-flooded rotary screw compressors are used in the

onshore and offshore oil and natural gas industry.


- In the textile industry, such as in Staubli's dobbie for Sulzer, Piccanol air-jet weaving looms.
- As a long-life lubricant for high ratio worm gearboxes.



Source: Anand Engineers Pvt Ltd

FZG gear picture taken upon completion of 12 load stages

**Conclusion**

Gear lubrication is more challenging than other machine components. Gear oils have to withstand harsh environments such as rust, water, and debris to hinder emulsification, foaming, and wear characteristics effect on gears. Of the four broad categories of gear oils, synthetic gear oils are best suited, especially for the demanding applications of open gears. There are various test methods used to determine the key properties of gear oils. However, for the most critical wear characteristics testing, the FZG Test (ASTM D 5182) & FE-8 Test (DIN 51819-3) are considered more reliable than the four-ball machines test (ASTM D 2783). Molygraph's Ultra Gear Syn 320 passes all the standard testing procedures as well as the critical FZG and FE-8 tests. It is a specifically designed synthetic gear oil for all types of industrial gear applications. 

**Oil additives are beneficial in adding certain properties to the oil. But sometimes it is also harmful to the gearboxes. EP additives that contain active sulfur aggressively react with the metal, causing wear and even failure.**



THE OFFICIAL MAGAZINE OF  PARTNERED BY   
Indian Machine Tool Manufacturers' Association

**SUBSCRIBE THE PRINT MAGAZINE AND GET THE DIGITAL FREE!**



[www.mmindia.co.in/magazine\\_issues](http://www.mmindia.co.in/magazine_issues)

Yes, I wish to subscribe to **MODERN MANUFACTURING INDIA**

1 Year	<input type="checkbox"/>	₹ 750
2 Years	<input type="checkbox"/>	₹ 1200

**PERSONAL DETAILS**

Company \_\_\_\_\_  
 Name \_\_\_\_\_  
 Department \_\_\_\_\_ Designation \_\_\_\_\_  
 Company Address \_\_\_\_\_  
 \_\_\_\_\_  
 City & Pin Code \_\_\_\_\_ Country \_\_\_\_\_  
 E-mail \_\_\_\_\_ Contact No. \_\_\_\_\_  
 Industry \_\_\_\_\_

**SUBSCRIPTION PAYMENT DETAILS**

Please find enclosed cheque / DD No.: \_\_\_\_\_  
 Drawn on (Name of bank & branch): \_\_\_\_\_  
 Dated \_\_\_\_\_  
 For Rs. \_\_\_\_\_ Rupees in words \_\_\_\_\_

Favouring **INDIAN MACHINE TOOL MANUFACTURERS' ASSOCIATION**  
 IMTMA, Bangalore International Exhibition Centre (BIEC), 10<sup>th</sup> Mile, Tumkur Road, Madavara post, Bangalore - 562123  
 Tel: 080 - 66246617 [imtma@imtma.in](mailto:imtma@imtma.in)  
 Sources & Terms of Supply: Orders can be placed directly with the publisher. No claims for the supply of back copies or reimbursement of subscription fees can be entertained for non-delivery of the magazine for reasons beyond the publisher's control.

# SEALS OF QUALITY

Novelty Impex has been manufacturing sealing products for three decades. With sound technical knowledge and vast production experience, the company has carved out a niche for itself in domestic and overseas markets with its brand of 'NOV'.



Source: Novelty Impex

**F**ounded in 1992, Novelty Impex has been manufacturing sealing products for over 30 years as a family-owned business, with ownership and management consisting of second- and third-generation family members. With a current turnover of ₹1.45 crore, the target is to reach ₹5 crore by the next fiscal year.

The highly innovative and technologically focused company is committed to providing its customers with world-class sealing solutions. It not only designs and delivers products, but its leading engineers and industry specialists also work directly with OEM and maintenance-and-repair customers. Together, they improve product designs and materials that substantially increase reliability and outperform stock products.

## Tracing the journey

Aditya Singhal, CEO, Novelty Impex, describes the company's journey, "Indian hydraulic and pneumatic industries were looking for quality sealing products to go into the cylinders as import substitutes with less technology available in India. Imported products were expensive and took a long time to be delivered here. There was a monopoly of foreign companies and no policies such as 'Make in India'. We faced many such hurdles and made Seals from 4mm to 1000mm with trademarks NOV, NOVFLON, NOVIE."

Based on a solid technical foundation and extensive production experience, the company has developed its brand of 'NOV', which has a good track record in domestic and international mar-

kets. Singhal says, "R&D is one of the most crucial driving forces of our success. Jodhpur is an excellent geographical site and has transport advantages that provide strong support for the development of Novelty Impex."

## Wide range of offerings

The company is a global manufacturer and exporter of Fluid Power Hydraulic and Pneumatic Seals, Wiper Seals, O-Rings, Rod and Piston Seals, Chevron Packing Seals, Das Compact Seals, Guide Strips, Bands and Spiral, Turcite Sheets for slideways, Bearings and other custom high-performance rubber and plastic parts made from a wide range of materials such as Polyurethane (PU), Polytetrafluoroethylene (PTFE), Nitrile Rubber (NBR) and Fluoro-Elastomers (FKM), FRP.

SOVAN TUDU  
Sub-Editor  
Magic Wand Media Inc  
Sovan.tudu@  
magicwandmedia.in



To meet the market's demand for special products, the company has taken the initiative to manufacture Bearing/Guide Strips, Spirals and Wear Rings, and Springs (Special Grade) for Energized Seals. Singhal reveals, "Novelty Impex is serving all major fields from car jacks to airplane seals with Heavy Earth-moving and Mining machines, Hydraulic & Pneumatic Cylinder manufacturers, Hydraulic Press manufacturers, Ceramic industry, Defence sector and many more."

Operating on a global scale, with exports to more than 30 countries, the company has OEM customers and business partners worldwide, including India. Action Construction Equipments Ltd, Schwing Stetter, and others are its significant clients. "We have a business partner in China, the toughest market for any Indian company to serve," he informs.

### Overcoming obstacles

COVID-19 and its subsequent lockdowns posed a slew of challenges for everyone. With seemingly insurmountable economic and social difficulties, the company realized the most difficult challenge was the responsibility of caring for its people. Singhal adds, "Many tested positive with COVID had to be provided



Source: Novelty Impex

"In today's era, Automation is a critical factor for growth. We have overcome this problem by importing the latest technology from all over the world to maintain our global presence in terms of quality, production, and pricing."

**Aditya Singhal**  
CEO  
Novelty Impex

with the necessary help. When the units opened from May 14, 2020, there was the challenge of making everybody adhere to the pandemic protocols. The Rajasthan Government opened the industries with a pass system for industry owners and staff. We are very thankful to our customers for making timely payments to us in this difficult time."

State-wise restrictions took a toll on the business, he shares. "Export orders were large, which created a big gap to be filled." Aside from the financial challenges that an SME faces, the other major challenge was attracting and retaining talented people. "Good people with talent find opportunities

in MNCs or bigger industries. SMEs cannot match the packages offered by MNCs, so we find it very difficult to get the right people. Indian Cylinder companies do not want to purchase seals from the SME sector due to large MNCs' branding and faith in them," he points out. "To overcome this issue, we have set up our in-house testing lab and test our products to ensure customer satisfaction."

### Getting ahead

To achieve the goal of making India self-reliant for its 'Aatmanirbhar Bharat' scheme, the Government of India is looking to MSMEs to help turn the coronavirus crisis into an opportunity. When asked if India has the potential to become a manufacturing powerhouse in the near future, Singhal staunchly believes that the country does. However, he suggests that those who invest and take risks in establishing new businesses or expanding existing ones should be supported by prioritizing their needs.

Various ministries and departments of the Government of India have been implementing schemes aimed at the MSME sector. New initiatives of the ministry and a market-driven economy result in an expansion of product portfolios, assisting 45 lakh Indian MSMEs. The Union Cabinet has approved funding of up to ₹3 lakh crore to MSMEs as part of the ₹20 lakh crore economic package announced earlier by Finance Minister Nirmala Sitharaman, with National Credit Guarantee Trustee Company Limited (NCGTC) providing 100 percent guarantee coverage. Elated, he says, "It is a wonderful step to help MSMEs with liquidity under NCGTC, started with the Modi Government, because MSMEs' major problems are financial issues and high rates of interest."



**Research and development in Material Science and Design Development is one of the most important driving forces behind NOV's growth and success.**



Source: Novelty Impex

# LEADING THE EV REVOLUTION

Auto tech startup Euler Motors aims to create superior alternatives to traditional mobility while removing barriers to EV mass adoption in India. From humble beginnings to steadily expanding its customer base beyond the development stage, the company is ready to take the business to the next level.



Source: Euler Motors

Shop floor of Euler Motors

**N**amed after the scientist Leonard Euler, Euler Motors was founded with the urge to address the rising pollution concerns and build innovative and powerful electric vehicles and a mobility ecosystem for India. “We have been inspired by companies like Tesla, which have successfully brought EVs to the world map and are driven towards making Euler Motors a Tesla for CVs (commercial vehicles) in India,” shares Saurav Kumar, Founder & CEO, Euler Motors.

“With our full-stack approach, which comprises powerful vehicles, charging infrastructure, service support and advanced technologies, we are making customers comfortable and open to

EVs in the first- and last-mile segment, including intercity travel,” he adds, pointing it out as one of the company’s most unique value propositions that has inspired immense customer confidence in the industry.

Saurav is in charge of product development and business expansion. He has also been involved in the design and development of HiLoad and its battery pack, as well as customer engagement and liaising with investor groups to raise funds for the company’s expansion. Other founding members include Gaurav Kumar, Head of Supply Chain & Manufacturing and Vani Rikhy Mehra, AVP, Sales and Mobility.

Gaurav oversees the company’s

entire value chain and processes, from component procurement to inventory and vendor management to vehicle production and planning. Mehra leads the vehicle’s entire sales ecosystem and the company’s customer order book and institutional sales. In the last two years, she has led the company’s customer pilot program, where she has worked with major e-commerce and hyper-local delivery companies such as Flipkart, Big Basket, Udaan, and Ecom Express. She and her team have managed the entire vehicle deployment, maintenance, and service support, resulting in a strong customer order book for the company, which has already surpassed 3,500 units.

SOVAN TUDU  
Sub-Editor  
Magic Wand Media Inc  
Sovan.tudu@  
magicwandmedia.in



She is also looking into retail sales, engaging with captive and retail customers.

### **Innovative mobility solutions**

The company, founded in 2018, has focused on building on tech leadership and designing superior products suited for Indian customers and road conditions, shares Saurav. HiLoad, the company's flagship vehicle, is a market differentiator with the highest payload capacity in the three-wheeler cargo segment, including Internal Combustion Engine (ICE) vehicles, at 688 kg. The payload capacity is also higher than the industry standard of 550 kg. "As an innovative EV, it also boasts of the highest battery power (12.4 kWh) and highest range (151 KM) with over six segment-first innovations in the segment to suit best-in-class performance," he mentions.

The HiLoad battery pack has an integrated thermal management system and liquid cooling technology that allows



Source: Euler Motors

"Product innovation has been our central focus, and we have the most powerful EV on the market. We have researched and incorporated new technologies such as BTMS (Battery Thermal Management System) and liquid cooling into our battery systems, which are new in the commercial vehicle segment."

**Saurav Kumar**  
Founder & CEO  
Euler Motors

vehicles to withstand a wide range of ambient temperatures and topographies for extended battery life. The vehicle also includes advanced telematics and software for fleet tracking, battery monitoring, and real-time charging, making it one of India's most advanced and

powerful electric vehicles. "We also have a footprint of over 500 charging infra points to support electric vehicles on the ground, with multiple charging variants and charge on wheels options," he claims.

### **Tackling hurdles**

Speaking of the teething issues and the strategies to deal with the increasingly fierce competition in the EV field, Saurav explains, "Our product, along with a full-stack approach towards EVs, has struck a chord with customers. Traditionally, EV models have been plagued by poor designs and fall short against bumpy stretches or extreme weather conditions. Therefore, product innovation has been our central focus, and we have the most powerful EV on the market. We have researched and incorporated new technologies such as BTMS (Battery Thermal Management System) and liquid cooling into our battery systems, which are new in the commercial vehicle segment."

He shares that the main concerns for customers in this segment are load capacity, reliable performance, and range anxiety, and that HiLoad excels in all of these areas. "We are also a step ahead in the industry as HiLoad is equipped with advanced telematics and software assistance that assures effective fleet management and real-time charging updates, contributing to efficient performance," he adds. "EVs cannot operate in silos, and we have, therefore, built products that are suitable for local business needs and provided charging infra and service support to ensure effortless operations. Our flexible and fast charging solutions, along with a network of charging stations and active service support, have also helped us gain customer trust."

**The industry should now focus on avenues for indigenous production of cells for EVs. The spotlight is also on semiconductors, which form the prime component of EV batteries, and perhaps now is the right time to put in efforts to localize these in India.**



Source: Euler Motors

Gaurav Kumar, Head of Supply Chain & Manufacturing, Euler Motors and Saurav Kumar, Founder & CEO, Euler Motors

**HiLoad, the company's flagship vehicle, is a market differentiator with the highest payload capacity in the three-wheeler cargo segment, including Internal Combustion Engine (ICE) vehicles, at 688 kg. The payload capacity is also higher than the industry standard of 550 kg.**

When asked about the lack of charging stations, charging time, and higher initial costs, which are some of the other barriers to EV adoption, Saurav responds by saying, "Yes, charging infrastructure is a critical factor towards EV adoption. Along with big and efficient battery packs, we have fast on-board chargers and an external charging network to address range anxiety in EVs. We have also introduced a unique initiative called 'Charge on Wheels' mobile service stations, which will provide charge and service to our EVs at any given location or breakdown point." Another major issue in the industry is EV financing, which he addresses by announcing, "We have also partnered with leading financiers in the EV space to provide easy credit access for drivers of electric vehicles and provide them with flexible options to cover asset costs."

Gaurav then helps us understand some stellar manufacturing practices and technologies essential for EVs, "EVs are driven by electricals and electronics. While India already has a well-developed mechanical supply chain for parts and components, the EV industry is now investing in a brand-new supply chain net-



Source: Euler Motors

"While India already has a well-developed mechanical supply chain for parts and components, the EV industry is now investing in a brand-new supply chain network for batteries, drivetrain, and power electronics. While this is the prime requisite, the next is the need to approach battery assembly innovatively and bring in more automation and standardization."

**Gaurav Kumar  
Head, Supply Chain & Manufacturing  
Euler Motors**

work for batteries, drivetrain, and power electronics. While this is the prime requisite, the next is the need to approach battery assembly innovatively and bring in more automation and standardization. This will help achieve a mass scale to produce vehicles that provide the same quality output across all deployments."

He points out that another focus for EVs should be on sustainable manufacturing, "As responsible OEMs, we must

commit to sustainability and aim to have a completely green value chain while adding multiple recycling processes on the shop floor. This should help set new benchmarks in auto manufacturing in India."

**Raising funds**

Financing and competition are two of the most significant barriers that startups face. However, the company has received funding from industry heavyweights such as ADB Ventures, Blume Ventures, Inventus Capital India, QRG Investments and Holdings, and US-based Emergent Ventures, with a total of US\$21.6 million raised since its inception. Revealing about the next round, Saurav says, "Euler Motors has commenced its series B fundraise and plans to raise around US\$50 million this year. The company plans to utilize these funds to scale up and strengthen its production capacity to deliver the strong order lineup for its HiLoad EV and cater to strong demand from the retail segment. The funds will also be used to expand our market footprint in India."

Three Wheels United (TWU), a Bengaluru-based tech-enabled financier of light EVs, has recently partnered with Euler Motors to accelerate the adoption of electric three-wheelers in India and promote sustainable mobility. "Our partnership with Three Wheels United is a strategic move to enable mass adoption of electric vehicles in India and achieve our common vision of zero-emission logistics and sustainable business operations. With this partnership, we aim to shift cargo drivers from renting to having their own three-wheeler EVs," he shares.

TWU will address the issue of high financing costs for potential EV drivers by offering loans covering up to 100 per-



Source: Euler Motors

HiLoad EV from Euler Motors

cent of the asset cost. Euler Motors will deploy over 1,000 HiLoad EVs across Delhi NCR, Bengaluru, Chennai, and Hyderabad as part of its partnership by the end of the financial year 2023.

### Localizing the EV supply chain

EVs with robust hardware and advanced software are the future, and while the primary supply chain for vehicle building exists, battery cell production in India has yet to be localized. Gaurav elaborates on the requirements, "The industry, thus, should now focus on avenues for indigenous production of cells for EVs. The spotlight is also on semiconductors, which form the prime component of EV batteries, and perhaps now is the right time to put in efforts to localize these in India."

He believes that in the coming years, semiconductors will be critical not only for the EV transition but also for digital transformation in other industries. "Therefore, as an industry, we must look at dedicating new capacity to enhance our tech


sovereignty. The prevalent chip shortage is steering us into collaboration and bringing in new players to innovate in this field. At Euler Motors, we have been working with suppliers from day one from the R&D stage to localize our components and design EVs from India, for India," he states.

Sharing his thoughts on the company's strategies for localized EV manufacturing and value chain networks, Gaurav informs, "Our approach has been on design and IP control, and our strategy has been to develop our own products. We don't retrofit. We have built our products from the ground up, with a localized component and supply chain, and partnerships. We have, therefore, incorporated in-house innovation on the technological front and deep partnerships with the right component manufacturers to create world-class EVs and chargers."

He further continues, "We have approximately 500 components in vehicles, of which approximately 100 components are in battery systems.

We procure these from the best suppliers without compromising on quality. We also have established channels where we can source components from multiple vendors if one channel doesn't work. Further, we have already achieved 85 percent of localization in our EVs."

### The road ahead

The company's first product HiLoad has received a positive response and has been in high demand across segments such as retail and e-commerce, as well as across markets throughout India. The CEO and Founder shares, "Currently, we have a production capacity of 4,000 units per annum, which we have planned to scale up by 35,000 units per annum by investing ₹200 crore in the next 12 months. We intend to have 8,500 units of HiLoad on the road by the end of the financial year 2023. We also have plans to set up an automated battery line for our patented liquid-cooled battery pack technology, which will set industry benchmarks in green manufacturing and sustainability." 

**Three Wheels United (TWU), a Bengaluru-based tech-enabled financier of light EVs, has recently partnered with Euler Motors to accelerate the adoption of electric three-wheelers in India and promote sustainable mobility.**



WWW.MMINDIA.CO.IN

The Official Magazine of



In Association with



## BUSINESS CONTINUITY



**We Value Your Consistency in Business and Endeavour to get you the latest from the Manufacturing Sector**

For Advertising: MURALI SUNDARAM  
E: murali.sundaram@magicwandmedia.in | M: +91 9740048390

## Company Index

AMADA India Pvt Ltd.....	26	Godrej Tooling.....	22
AMPCO METAL India Pvt Ltd.....	26, 38	Godrej & Boyce Manufacturing Company.....	22
Amplify Additive.....	36	HELLA.....	42
Anand Engineers Pvt Ltd.....	46	Imaginarium Solutions (I) Pvt Ltd.....	26
Bystronic Laser India Pvt Ltd.....	26	IMTMA.....	10, 26
Carl Zeiss India (Bangalore) Pvt Ltd.....	26	IPG Photonics (India) Pvt Ltd.....	26
Devic Earth Pvt Ltd.....	12	Jedox Asia Pacific.....	16
Drishti Technologies, Inc.....	42	Materialise SDN BHD.....	26
Euler Motors.....	54	Meiban Engineering Technologies Pvt Ltd.....	26
Fenwick and Ravi.....	26	Novelty Impex.....	52
Grind Master Machines Pvt Ltd.....	26	Sahajanand Laser Technology Ltd.....	26

## Advertiser Index

ACMEE 2023 – <a href="http://www.acmee.in">www.acmee.in</a> .....	05
Beckhoff Automation Pvt Ltd – <a href="http://www.beckhoff.co.in">www.beckhoff.co.in</a> .....	25
CGTech India Software Solutions Pvt Ltd – <a href="http://www.cgtech.co.in">www.cgtech.co.in</a> .....	35
CHIRON India Machine Tools Pvt Ltd – <a href="http://www.chiron-group.com">www.chiron-group.com</a> .....	21
DMG MORI – <a href="http://www.automation.dmgmori.com">www.automation.dmgmori.com</a> .....	07
FIBRO India Precision Products Pvt Ltd – <a href="http://www.fibro-india.com">www.fibro-india.com</a> .....	43
EPLAN India – <a href="http://www.eplan.in">www.eplan.in</a> .....	15
Hann Kuen Machinery and Hardware Co., Ltd – <a href="http://www.hardy-tw.com">www.hardy-tw.com</a> .....	45
IMTMA - IMTEX 2022 – <a href="http://www.imtex.in">www.imtex.in</a> .....	33
IMTMA - IMTEX 2023 – <a href="http://www.imtex.in">www.imtex.in</a> .....	60
IMTMA - ACE Micromatic Productivity Championship Awards 2022 – <a href="http://www.productivity.imtma.in">www.productivity.imtma.in</a> .....	47
IPG Photonics – <a href="http://www.ipgphotonics.com">www.ipgphotonics.com</a> .....	09, 28, 29
Jyoti CNC Automation Ltd – <a href="http://www.jyoti.co.in">www.jyoti.co.in</a> .....	03
Lakshmi Machine Works Ltd (LMW) – <a href="http://www.lmwcnc.com">www.lmwcnc.com</a> .....	11
Quaker Houghton – <a href="http://www.quakerhoughton.com">www.quakerhoughton.com</a> .....	06
Samraj Engineering Controls – <a href="http://www.samrajmetalfabricators.com">www.samrajmetalfabricators.com</a> .....	02
Marposs India Pvt Ltd – <a href="http://www.marposs.com">www.marposs.com</a> .....	31
RV Forms & Gears LLP – <a href="http://www.rvformsandgears.com">www.rvformsandgears.com</a> .....	59
Tumakuru Machine Tool Park (TMTP) – <a href="http://www.tmtip.in">www.tmtip.in</a> .....	49



**When visibility matters  
it is always MMI!**

**Block your space in MMI  
and keep getting leads!**

**MMI: IMTMA's Official Publication**

**For Advertising: MURALI SUNDARAM**  
**E: [murali.sundaram@magicwandmedia.in](mailto:murali.sundaram@magicwandmedia.in) | M: +91 9740048390**

# Intelligent Fixtures

A breakthrough Industry 4.0 solution for Fixtures.



Smartfix 4.0 is a unique Industry 4.0 solution for all types of Fixtures and Workholding which uses Data Analytics and Artificial Intelligence to give the user a lot of useful information like:

- Tool Wear Analytics
- Cost Per Component Analytics
- Vibration Alerts
- Declamp Alerts
- Output of Fixture and Machine
- Predictive Maintenance of Fixture and Machine
- Analytics of Operator Efficiency
- Historical Analysis of performance of machine, powerpack, tools and fixture
- Powerpack oil level and oil contamination alerts

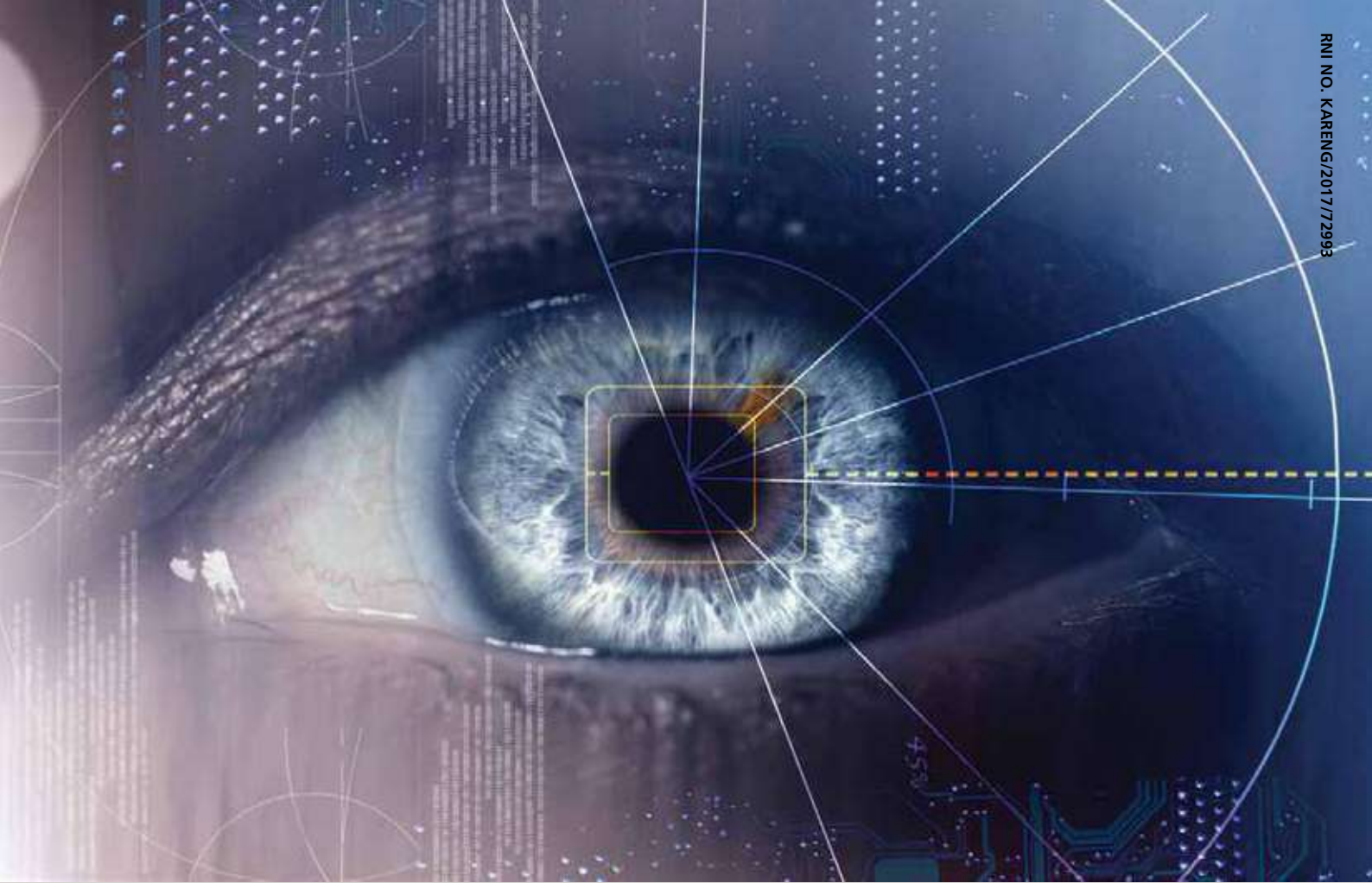
Smartfix 4.0 can be installed on existing fixtures also and is the most cost effective way of making the entire machining set up Industry 4.0 enabled.

## SmartFix4.0®

For over 45 years Forms & Gears has been supplying Precision Machining Centre Fixtures to the world's leading Auto OEMs and Machine Makers in Japan, Germany, UAE, Qatar, Thailand, Turkey, Indonesia and all over India.

**RV Forms & Gears LLP**  
MF 11, SIDCO Industrial Estate, Guindy,  
Chennai - 600 032, Tamilnadu, India  
Call +91 77570 53326 or email us on  
marketing@rvformsandgears.com  
[www.rvformsandgears.com](http://www.rvformsandgears.com)





# TECHNOLOGY @ work



International Machine Tool & Manufacturing Technology Exhibition



International Exhibition of Cutting Tools, Tooling Systems, Machine Tool Accessories, Metrology & CAD / CAM

Concurrent shows



International Exhibition on Industry 4.0 & Additive Manufacturing

**19 - 25 January 2023, Bengaluru, India**



Organiser  
  
Indian Machine Tool Manufacturers' Association

Venue  
 Bangalore International Exhibition Centre

