VOL 2, ISSUE 1 - MAY 2018

MODERN MANUFACTURING INDIA

WWW.MMINDIA.CO.IN

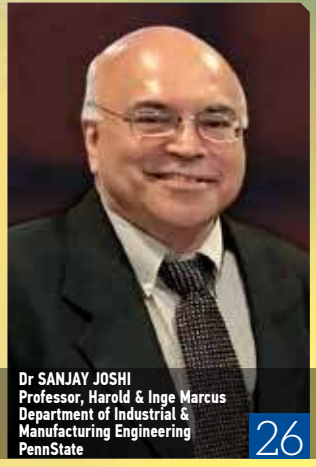
The Official Magazine of

Indian Machine Tool Manufacturers' Association

In Association with

Modern Machine Shop

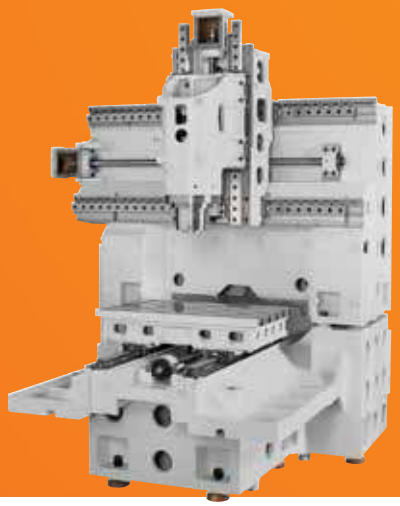
THE WINDS OF CHANGE



S&T GROUP since 1996

HIGH SPEED MACHINING CENTER

The Gantry machine frame with rigid dual wall castings ensure low vibration machining performance during high speeds and results in superior surface finish and increased tool life.



CUTTING SPEED
X / Y / Z - 20 m/min

X/ Y/ Z TRAVEL
700x 510x 410 mm

BT 40, 12000rpm Direct Drive Spindle
15,000 rpm, 24,000 rpm (Optional)

DIRECT DRIVE SPINDLE

Motor direct-coupled spindle rotates up to12,000rpm, with torque directly transmitted through the shaft coupling, which ensure low inertia but keeps high efficient machining performance.

To know more about STM range of machining centres call us at **98652 33855** or visit us at www.stmcnc.com

JYOTI

EXPERIENCE nvu

THE NEXT-GEN

DX 200 Series nvu
CNC Turning Centers

PX Series nvu
CNC Vertical Machining Centers

VMC Performance Series nvu
CNC High Performance Vertical Machining Centers

KMILL Series nvu
CNC Bridge Type Vertical Machining Centers

NX Series nvu
CNC Double Column Machining Centers

K3X8 Five Series nvu
CNC 5-Axis Bridge Type Machining Centers

nvu

We are what we repeatedly do.
Excellence then, is not an act, but a habit.
Aristotle

JYOTI CNC AUTOMATION LTD.
jyoti.co.in

G-506, G.I.D.C Lodhika, Village: Metoda, Dist: Rajkot-360 021, Gujarat(INDIA)
T: +91-2827-235100/101, E: info@jyoti.co.in, sales@jyoti.co.in

CONTENTS

VOL 2, ISSUE 1, MAY 2018

IMPRINT

PUBLISHER &
DIRECTOR GENERAL & CEO, IMTMA
V Anbu

EDITORIAL
Editor-in-Chief
Soumi Mitra

Chief Copy Editor
Poonam Pednekar

Correspondent
Arunima Nath

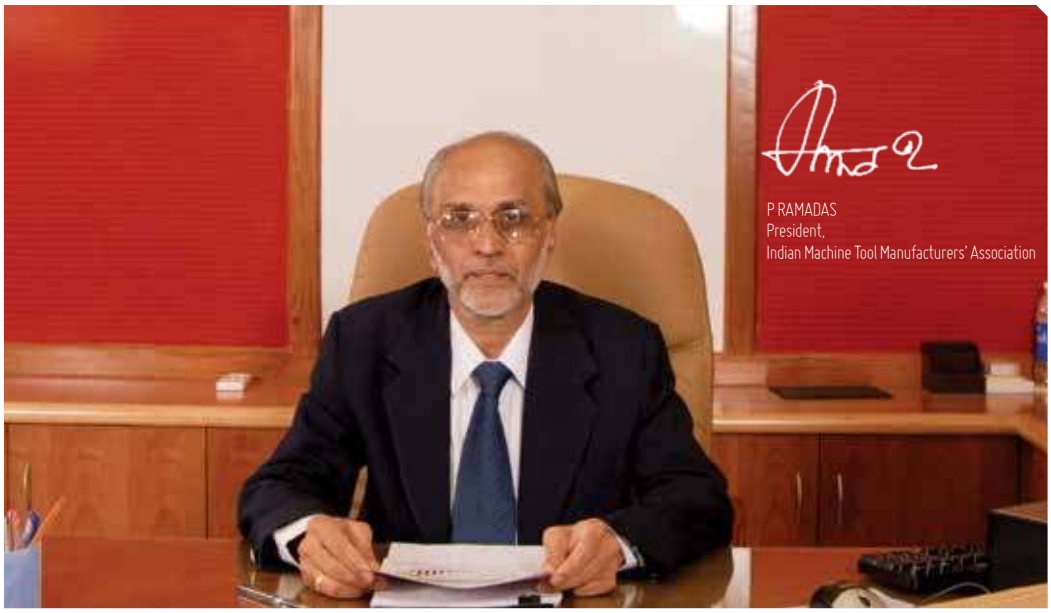
Design
Magic Wand Media

SALES & MARKETING
Indian Machine Tool Manufacturers' Association (IMTMA)
Murali Sundaram, Magic Wand Media Inc
murali.sundaram@magicwandmedia.in

Published and Printed by V Anbu on behalf of Indian Machine Tool Manufacturers' Association. 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.



GROWTH OPPORTUNITIES IN SUNRISE SECTORS

India's machine tool industry has been coasting well over the last one year. The demand for machine tools is estimated to be ₹14,250 crore in FY 17-18. Production is estimated to have grown by 26 percent and consumption is estimated to have grown by 23 percent during this period. India is ranked 10th in production and 8th in consumption in Global rankings as per Gardner Research Survey 2018.

At present, the manufacturing sector contributes 18 percent to the country's GDP and the Government of India's aim is to increase this share to around 25 percent in the coming period. This will happen when our machine tool industry grows strong and we begin exploring possibilities of substituting imported machinery with indigenous ones to meet the strategic needs of various industries.

IMTMA has scheduled the second edition of Pune Machine Tool Expo (PMTX 2018) at Auto Cluster in Pune from 27-30 September 2018. The expo will be a significant one for original equipment manufacturers (OEMs) and small and medium enterprises (SMEs) and will be a platform for the regional industries to gain access to new technologies for enhancing their productivity and meeting production necessities.

Manufacturing is a buzzword in sunrise sectors with immense potential in areas such as aerospace, defence, medical equipment, etc. Tapping these sectors could create a potential market for the machine tool industry. Constant innovations and regulations can create abundant opportunities for manufacturing technologies as well as for machine tools. We need to stay tuned for this.

This issue of MMI focuses on the medical sector. The magazine also includes an opinion piece from IMTMA on the medical equipment industry in which the Association shares its thoughts on various opportunities that it creates for the machine tool sector.

Readers can download previous editions of the magazine from IMTMA website.

P RAMADAS
President
Indian Machine Tool Manufacturers' Association (IMTMA)

The servo terminal for motors with One Cable Technology.

Directly connect AM8100 servomotors to a 12 mm Bus Terminal.

www.beckhoff.co.in/EL7201-0010

The space-saving servo terminals in the EL7201 series of the Beckhoff EtherCAT Terminal system integrate a complete servo drive for motors up to 200 W in a standard terminal housing. The new EL7201-0010 variant supports "One Cable Technology" (OCT), a key innovation of the AM8100 servomotor series:

- Direct connection of power and feedback signal in a single cable to 12 mm Bus Terminal
- Material and commissioning costs are drastically reduced (up to 50 %).
- The EL7201-0010 supports the direct connection of the AM81xx servomotors (0.19 Nm up to 1.35 Nm).
- 2 fast inputs enable a precise position latch.
- All AM8100 motors have absolute feedback (single- or multi-turn) and an electronic identification plate.

BECKHOFF ENABLING MADE BY INDIA

POWERING YEAR 10

Beckhoff Automation Pvt. Ltd.
Pune – 411 006, India
Phone: + 91 20 40 00 48 00
info@beckhoff.co.in

New Automation Technology **BECKHOFF**

Dear MMI Readers,

A remarkable year has passed by since the re-launch of Modern Manufacturing India (MMI) magazine under the IMTMA (Indian Machine Tool Manufacturers' Association) banner. It has been an eventful ride. The innovations that we made in the typeface, content and design have struck a chord with our readers. The favorable review that we have received will further spur us in our onward journey as the magazine enters its second year of publication.

The mission of IMTMA is to promote the cause of the manufacturing industry and since the time we have re-launched, we have published several stories to spark new business opportunities for the machine tool industry.

Medical engineering and medical equipment manufacturing are considered to be a sunrise sector and an untapped one in the country. Harnessing the potential of this industry would bring a sea change in the overall development of India's healthcare sector.

The current edition focuses on medical segment. It features an article from IMTMA's desk on the opportunities in store for the machine tool sector in medical equipment manufacturing.

On behalf of IMTMA, I thank you for your continued interest in MMI. Please share your valuable feedback which will aid us in our journey.

Wish you a happy reading.

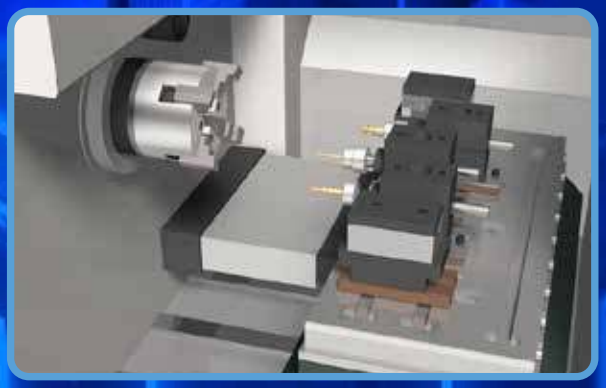
V ANBU
DIRECTOR GENERAL & CEO
IMTMA

MITSUBISHI ELECTRIC
Changes for the Better

for a greener tomorrow eco Changes

Get the Peace of Mind with NEW

2 + 1 Year Warranty from MITSUBISHI CNC



- Available for E70 Turning Packages*
- Value enhancement to machines
- Cost effectiveness to production environment
- Unexpected failures best managed
- Increasing customer confidence
- Delivering maximum ROI

Contact:

Mitsubishi Electric India Pvt Ltd, CNC Technical Center, Plot No.56, 4th Main Road, Phase 3
Peenya Industrial Area, Bangalore, Karnataka, India Pin 560058. Tel:+91-80-46552121

e-mail:

Sales : NC_Sales_India@asia.meap.com | **Service** : NC_Service_India@asia.meap.com

*Warranty of 36 months from machine installation or 42 months from the date of package dispatch whichever is earlier. This offer is optional.

www.MitsubishiElectric.in

IMTEX 2018
An AIEMA Initiative

Visit us at:
Hall A, Stall A113

MITSUBISHI CNC
THE CUTTING EDGE OF MACHINING CONTROL

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

CONSISTENCY IS THE KEY TO **STEPPING UP**

Time is fleeting. This adage, though daunting, is a gentle nudge to stay single-mindedly committed while steering a course to success in the given timeframe.

This is our mantra, the fruits of which we have been bearing for the last one year, since the revamped MMI came into being. We have been swamped with tremendous encouragement and appreciation from the manufacturing fraternity as well as from our growing number of subscribers who keep letting us know they value what we offer to them.

Your feedback has immensely helped us. We are grateful to you, our readers, contributors and advertisers for the constant support which has helped us embark on our second year.

Your faith in us motivates us to consistently bring to you breakthroughs, experiences and success stories that are in sync with the needs of the hour. In doing so, we get to work with some of the best and smart companies that share our enthusiasm in bringing out unique stories and strongly supporting innovation.

> *"You make a living by what you get. You make a life by what you give."*

In the spirit of things, we have launched a segment on employment opportunities in this issue to help serve as a conduit between industry requirements and the marketable talent.

And last but not least, I thank all our MMI Team members who work tirelessly to constantly value add to the print and digital versions of the magazine and ensure we stay in the lead.

I believe the road to success is always a work in progress and the best is yet to come. Until then keep pouring in your thoughts as we keenly look forward to it.

MEET THE WORLD LEADERS IN MACHINE TOOLS

ACMEE 2018
13th INTERNATIONAL MACHINE TOOLS EXHIBITION
An AIEMA Initiative
www.acmee.in

ORGANISED BY
AIEMA

TITLE SPONSOR
SCHUNK

JUNE 2018
21 22 23 24 25

Chennai Trade Centre, Chennai

- 480 Participants
- 28 Countries
- Technical Sessions
- Live Demonstration
- Robots in Action

PLATINUM SPONSORS

AMS In Pursuit of Excellence Ace Micromatic Group Company
Mahr EXACTLY

GOLD SPONSORS

ALSTRUT POSSIBILITIES UNLIMITED
CONSUL NEOWATT Global Indian UPS
VIGNESH MACHINE TOOLS THE RIGHT PARTNER FOR YOUR MACHINE TOOLS
UCAM Engineering Excellence. Exactly.
sidbi
K-LITE
JAIBALAJI CONTROL GEARS PVT. LTD

SILVER SPONSORS

INT INDO NIHON TECHNOLOGIES NIKKEN RIX
METI An Industry 4.0 Company
FME STAINLESS Fabrimech Engineers Pvt. Ltd.
TSUGAMI
APEX PRECISION
Tapco
mtandt
PBSIE PRECISION BRIGHT STEEL INDUSTRIES
ACCURATE MACHINES AND ACCESSORIES PVT. LTD.
CLASSIC MOULDS AND DIES
SRI HARI INDUSTRIES
R.C. DAS ENGG. www.rcdas.in
ELTA
APPLIED ENGINEERING APPLIED ENGINEERING & TECHNOLOGY (P) LTD
htm HI-TEK MACHINES
KKR K.K.R. METAL COMPONENTS

SIDCO - AIEMA Tower, First Main Road, Ambattur Industrial Estate, Chennai 600 058. Phone : +91 - 44 2625 0245 / 2625 0489, Email : booking@acmee.in

POWERED BY
Indian Machine Tool Manufacturers' Association

MEDICAL EQUIPMENT INDUSTRY: A NEW SUNRISE SECTOR FOR MANUFACTURING TECHNOLOGIES

The Indian machine tool industry is all geared up to explore opportunities in medical device manufacturing. With the Government's supportive initiatives in this regard, the industry is close to establish the country as a hotbed for the manufacture of healthcare equipment.

Source: DMG MORI

The stability and performance of the DMG Mori machines enable high precision for complex prosthetic components made from aluminium, steel or titanium.

Machining equipment for the medical sector when manufactured indigenously carries distinct advantages. One of them being the affordability it will have for a price-sensitive Indian market. Local manufacturing of sophisticated devices need advanced technologies and this will be made possible when machine tool industry weaves in technology, innovations and R&D. Once these are channelized, India may emerge as a hub for the manufacture of medical equipment.

For this we need to create a synergy between the manufacture of medical equipment and technology. The Government of India could play a role in this by establishing a link between machine tools and medical equipment manufacturing.

Embracing advanced technologies

Indian machine tool industry, on its part, needs to innovate as well as move towards next

generation technologies such as additive manufacturing, IoT, artificial intelligence, robotics, automation, etc. to enhance precision and quality of medical equipment manufactured in India. This will also lead to the development of critical devices and consumables required for day-to-day patient care such as valves, stents, orthopaedic and dental implants, other diagnostic equipment, surgical instruments, and many more. With the development of indigenous products, the dependency on imported technology could be drastically reduced.

The Government of India's support for R&D in machine tool industry with the setting up of the Advanced Manufacturing Technology Development Centre at IIT-Madras is expected to push this forward. The Centre, in collaboration with industrial partners, offers solutions for developing advanced technologies. This will lead to the manufacturing of high-precision components, sub-assemblies, laser welding medical devices, etc.

Quite recently, the Department of Pharmaceuticals, GoI, has sought comments from various stakeholders for its proposal that domestically sourced components have to contribute 25-50 per cent of the cost of medical devices procured by the Government, depending on the category of the device.

Medical equipment manufacturing offers scope

Speaking on the opportunities for the machine tool industry in medical equipment manufacturing, P Ramadas, President, Indian Machine Tool Manufacturers' Association (IMTMA), said, "There is much to be explored by the machine tool industry in medical equipment manufacturing. Government initiatives have given us the right directions and the machine tool industry needs to take full advantage of it. The Government's move to consider manufacturing of medical equipment as distinct from medicines from a regulatory perspective will help medical equipment manufacturers, and we expect that the development will translate into more orders of machine tools needed for manufacturing that equipment."

V Anbu, Director General & CEO, IMTMA, supported Ramadas' views: "The establishment of med tech parks in Andhra Pradesh, Gujarat and Maharashtra, which will have in-house manufacturing facilities and access to raw materials, will bring down the cost of manufacturing and create demand for manufacturing technologies."

In health space, Indian medical devices industry is a sunrise segment. It is a major contributor for employment as well as revenue. As per the Government of India's estimates, there are some 750 – 800 medical device manufacturers in India with an average investment ranging from ₹17 – 20 crore and an average turnover of ₹45 – 50 crore.

India rising as a sought-after destination

India is firmly placed as one of the markets to look out for ranking just behind Japan, China and South Korea. Foreign firms are eyeing India as a manufacturing stronghold and many are setting up facilities of their own or acquiring domestic companies for production of devices having high level of performance. Some of these are 3M's manufacturing plant in Pune, Becton Dickinson's manufacturing facility in Haryana, Hollister setting up a facility for manufacturing healthcare products in India, Philips acquiring Alpha X-ray Technologies, etc.

It is also interesting to note that quite recently, the Department of Pharmaceuticals, Government of India, has sought comments from various stakeholders for its proposal that domestically sourced components have to contribute 25 – 50 per cent of the cost of medical devices procured by the Government, depending on the category of the device. This would further aid the industry in indigenous production as purchase preference shall be given to local suppliers.

India's machine tool industry is known for catering to the ever-growing needs of automotive industry and the time has come for it to look at sunrise sectors such as medical equipment industry which will enable the machine tool industry garner sustainable business.

IMTMA Celebrates 50 Years of IMTEX

IMTMA will organize its flagship IMTEX 2019 & Tooltech 2019 at Bangalore International Exhibition Centre (BIEC), Bengaluru, from January 24 – 30, 2019.

The exhibition will showcase the latest trends and technological refinements from India. It will also host global players from a wide spectrum of manufacturing and ancillary industries including medical equipment manufacturing.

As part of IMTEX 50 years celebration, IMTMA is introducing two new concurrent shows: The one on additive manufacturing will focus exclusively on products related to additive manufacturing. The other show will have Industry 4.0 as its focus. It will shed light on the technologies that are being adapted in smart manufacturing.

Stay tuned to **www.imtex.in** for further developments.

Source: IMTMA

Mohan Ram, Senior Advisor, IMTMA (second from left), receiving the award.

IMTMA bags laurel

New Delhi, Delhi – IMTMA recently received the 'Country Level Annual Award for Responsible Indian BMOs (Business Membership Organizations also called as Industry Associations and Chambers of Commerce)' in the 'Social Category' organized by Foundation for MSME Clusters. The prestigious award was presented to IMTMA for the positive impact it is creating among the Indian Machine Tool industry and its customer segments through the training programs it conducts in IMTMA Productivity Institute and Design Institute. The award aims to encourage and promote responsible business practices in the industry, especially among MSMEs. 145 BMOs from 19 states participated in the award competition out of which 12 BMOs were selected for the final round by an independent jury who evaluated IMTMA's case study on Skill Development activity.

NITI Aayog and ABB India join for AI-Ready India

New Delhi, Delhi – The National Institution for Transforming India (NITI Aayog) and ABB India have signed a Statement of Intent (SoI) to support the Indian government realize its "Make in India" vision through advanced manufacturing technologies incorporating the latest developments in robotics and artificial intelligence (AI). "We look forward to learning more about practical applications of AI and IoT, especially in streamlining governance and economic systems. This collaboration is meant to lead to actionable insights and focused plans that will help India become a center for advanced manufacturing," said Amitabh Kant, CEO, NITI Aayog.

Source: Siemens

Roland Busch, CTO & Member of Board – Siemens; Deepak Parekh, Non Exec-Chairperson – Siemens India and Chairman – HDFC; and Sunil Mathur, CEO & MD, Siemens India, releasing an Industry Vertical Market Report at Siemens Innovation Day.

Siemens to open MindSphere Application Centers

Mumbai, Maharashtra – At the recently held Siemens Innovation Day India 2018, the company announced the launch of four MindSphere Application Centers across the country. At these centers, in cooperation with customers, Siemens will develop industry-specific digital solutions for data analysis and machine learning with a special focus on MindSphere – Siemens' open, cloud-based operating system for the Internet of Things (IoT). One centre each will be located in Pune, Noida, while two will be in Gurgaon. Each center will focus on its own area of expertise: Pune center will work on creating IoT-support for Power Generation Services; in Noida, engineers will migrate energy IP platforms to MindSphere; while the Gurgaon centers will develop power plant automation applications and apps for steam turbines.

Source: Materialise Software

Vishwanath Godavarty, Regional Account Manager – India & South Asia, Materialise Software, educating the audience on the benefits of 3D Printing during the session.

3D Printing forum on latest trends held

Pune, Maharashtra – Materialise Software, a global leader in 3D printing, recently organized a forum in Pune titled "Indian Automotive 3D Printing" that expounded on the benefits of 3D Printing in the automotive industry and its impact on the production process.

The discussion also shed light on the barriers and upcoming trends in 3D printing, and ways to promote and utilize it in the near future, so as to have competitive business advantage in the automotive industry.

Industry experts who presided the forum included Ajay Purohit, Technical Chief Rapid Proto and Craftsmanship Tools, Tata Motors; Monika Mahto, Research Manager, Research & Insights, Deloitte Support Services India; and Rajeev Ranadive, Chairman & Managing Director, Pixy Electric Cars.

DMI 2018 garnered positive response

Mumbai, Maharashtra – Organized by Tool and Gauge Manufacturers Association – India (TAGMA India), Die & Mould India (DMI) 2018, held from April 11-14 at Mumbai, garnered good response from the manufacturing fraternity. The biennial event showcased the latest products and solutions for the Die & Mould industry. "We have come a long way. This year we have about 300 exhibitors, which is 15 percent higher from the previous show. The industry has to become globally competitive to survive," noted DK Sharma, President, TAGMA India.

Jamshyd N Godrej, Chairman & Managing Director, Godrej & Boyce Manufacturing Company Ltd, said, "The Die and Mould sector will create many opportunities in the coming future and the need of the hour is enhanced technical education, as there is immense scope for highly skilled people in the industry."

CONSTANTLY INNOVATING

IMTS REGISTRATION IS NOW OPEN.
SIGN UP AT IMTS.COM

IMTS2018

International Manufacturing Technology Show September 10 - 15, 2018 | McCormick Place | Chicago, IL

GROWING CAPITAL EQUIPMENT BUSINESS BEYOND SET BOUNDARIES

In mature markets, it is a massive challenge to successfully compete and thrive. There exist countless issues to deal with, problems to address and processes to be put in place in order to manage them. The companies that are most likely to emerge successful in a sustainable manner are the performers that can achieve an optimal balance between their customers, cost competitiveness, operational agility and market confidence.

Performers approach markets with a deep understanding of their target customers. They are aware of the segments within their customers: customers that keep them fit, those who keep them busy and those who drain them out. They have a range of products and support services developed for each such segment to better meet their needs. They move pricing as close to the market as possible and as much under their control as possible. They take all their stakeholders with them through clear and specific communication about markets and challenges with periodic status updates.

Innovating on products & services

Performers speed up their new product and service development and launch them faster in the marketplace to maximize value to their customers without sacrificing their internal interest, thus moving higher on the value curve and making themselves harder to displace. This is achieved by innovating inclusively with the customer, for example by providing them training along with a product or working on logistics needed or adding features or specifications to the products. And while doing so they continuously and proactively keep sharing more and more detail on the potential of their innovation with their stakeholders and the progress they are making on it.

Talent engagement

Performers engage with the talent within the company and at their partners in an extremely inclusive manner. They are acutely aware that talent is an asset to protect. They are selective about the kind of talent they require and offer them opportunities and fulfilling experiences to retain them.

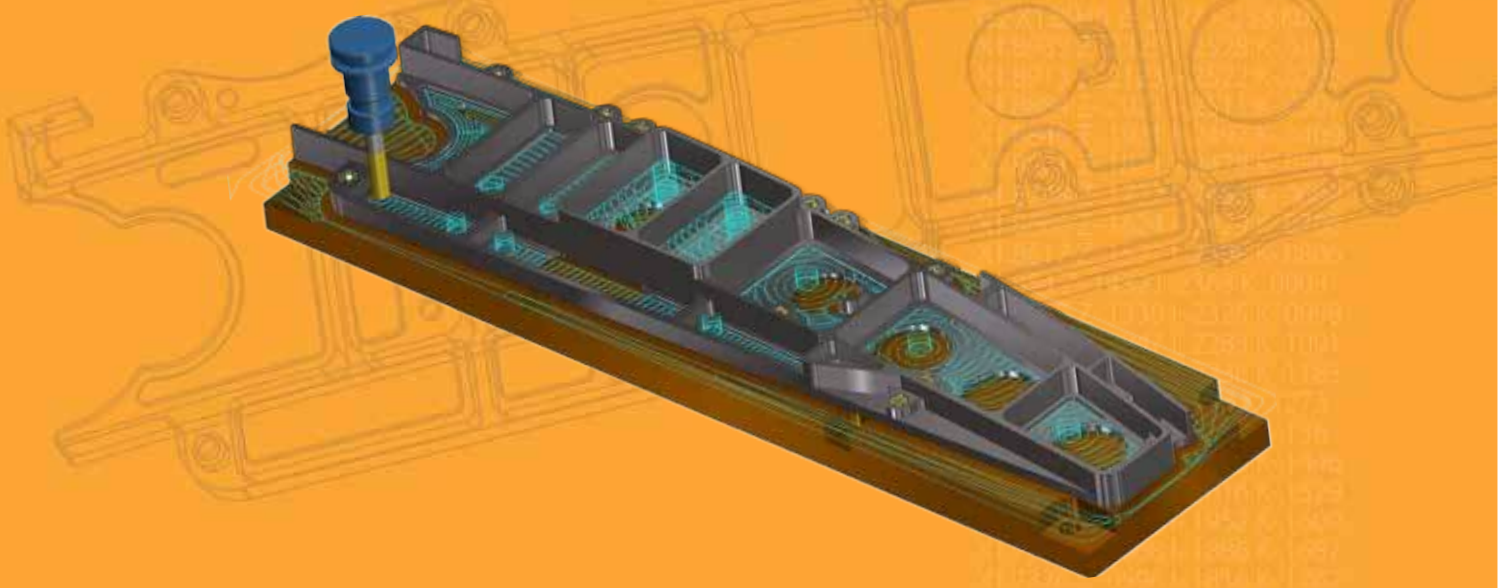
While the actions differ from company to company and are situation dependent, performing companies have an integrated view of their distinctive growth opportunity, which they execute effectively across the organization and in the marketplace in a cohesive manner with their partners. This creates a powerful positioning that resonates in the marketplace and within the organization.

High-performing companies go beyond set boundaries using market leader-ship as a tool rather than a goal. It is the result of management action that optimizes continuously to better place itself and keep improving its competitive position sustainably.

T K RAMESH
Whole time Director and CEO
Micromatic Machine Tools Pvt Ltd

The views expressed by the author are personal and he can be contacted at rameshtkr@gmail.com

DIFFICULT MATERIALS MADE EASY



LESS CHATTER. SHORTER CYCLES. YOU CAN HEAR THE DIFFERENCE.

Mastercam's Dynamic Toolpaths deliver a consistent chip load, making difficult material easier to cut. That means longer tool life, reduced machine wear, and shortened run times.

See and hear the difference at Mastercam.com/dynamic.

Phone: +91 7378 55 2000

For more information, visit
mastercam.com/dynamic

Email: info@mastercamindia.com

Mastercam®

DYNAMIC MOTION™

Now HIRING!

ISGEC Machine Building Division, Manufacturing Mechanical & Hydraulic Presses requires following professionals:

Job Title:
Design Manager (R&D)

Functional Area:
Application Research & Development

Skills Required:

Should have experience in Design of Mechanical Presses and its associated accessories (like SMED, Transfer System, Material Handling etc);

Knowledge of Servo motors, gear design, basic electrical and electronics engineering, high level programming language, SolidWorks, metallurgy, hydraulic system & circuits and automation system will be preferred;

Good knowledge of Beam and Torsion theory.

Job Title:
Assistant Manager/Dy.Manager (IT)

Functional Area:
Application Research & Development

Skills Required:

Knowledge of Cloud Technologies: Big Table, Big Query, App Engine Flex, App Engine Standard. Stack driver and Google compute Engine;

Experience on Machine Learning Algorithm development on Google Cloud;

Experience on software development related to data ingestion/filtration/pattern analysis/storage/ analytics in a scenario of real-time data capturing & analysis for the IOT/Sensor fitted industrial equipment linked with Google Cloud.

Job Title:
General Manager (Capital Machinery)

Functional Area:
Sales & Marketing

Job Description:
Sales & Marketing of Metal Forming Machines like Hydraulic & Mechanical Presses, Tandem Press Lines, Transfer Mechanical Presses.

Skills Required:
Negotiation, Competitive and SWOT analysis, Customer Relationship Management, Market Intelligence, Pricing Strategy, Decision making etc.

ISGEC Heavy Engineering Ltd Saharanpur Road, Yamuna Nagar – 135 001, Haryana.
T: + 91 1732 661278 | E: dkjain@isgec.com | www.isgec.com

Micromatic Machine Tools Pvt Ltd is looking for suitable candidates to fit in the following technical positions:

Job Title:
Application Engineer

Department:
Tech Center

Location:
Chinchwad

Skills Required:
The candidate must be a diploma or a degree holder in Mechanical Engineering;

Must have an industry experience of 2-3 years

Job Title:
Assistant Manager

Department:
Marketing

Location:
North Corporate Office

Skills Required:
The candidate should be a diploma or a degree holder in Mechanical Engineering;

Must have an industry experience of 11-12 years;

Must be an AMIT Specialist.

Job Title:
Assistant Manager

Department:
Marketing

Location:
West Corporate Office

Skills Required:
The candidate must be a diploma or a degree holder in Mechanical Engineering;

Must have an industry experience of 11-12 years;

Must be a Die-mould Specialist.

Micromatic Machine Tools Pvt Ltd Plot No. 240/241, 11th Main, 3rd Phase, Peenya Industrial Area, Bangalore – 400 058, Karnataka. T: +91 80 40200 555 | E: connect@acemicromatic.com | www.acemicromatic.net

Imaginarium Rapid Pvt Ltd is looking for a suitable candidate as:

Job Title:
Business Development Executive

Location:
Bangalore and Delhi

Skills Required:
Candidates with Engineering background will be preferred;

Experience in 3D printing, Injection Moulding, CNC machining is a must;

Customer-focused and service-oriented;

Ready to learn new skills, adapt to changing environments and show attention to detail;

Minimum 1-3 years' experience in technology/services sales or capital equipment sales, preferably in product development and manufacturing organizations;

Rapid Prototyping/Additive Manufacturing Sales/ Services experience would be an advantage;

Strong interpersonal skills and an ability to work with teams;

Strong prospecting skills and ability to develop business.

Responsibilities Include:
Generating demand and consistent pipeline for assigned rapid prototyping and tooling services through prospecting, account calls, demonstrations, and marketing activities;

Being a One Point contact for existing customers for order coordination;

Managing sales activities of the assigned territory and providing detailed, accurate monthly forecasts;

Meeting monthly, quarterly, annual revenue goals;

Coordinating with project management team within the company to ensure high levels of customer satisfaction and delivery;

Understanding business processes of potential clients, strategize, present and demonstrate tailored service solution.

Imaginarium Rapid Pvt Ltd 7th Floor, The Great Oasis, D-13, Road No 21, MIDC, Andheri (E), Mumbai – 400 093, Maharashtra. T: +91 22 6738 0100 | E: careers@imaginarium.io | www.imaginarium.io

BEMATO®

STRIVING FOR SERVICE AND SATISFACTION

SINCE 1976

www.e-bemato.com

BMT 712A
BANDSAW

RECHARGEABLE
LED WORK LIGHT

TROLLEYS
(LT25+W61)

BMT 4500V
VERTICAL MILLING MACHINE

POWER MACHINE VISES
ADJUSTABLE TYPE

BMT 1740G
HIGH SPEED PRECISION LATHE

2/3/4-JAW H.S. HOLLOW /
SOLID POWER CHUCKS

END MILL

BMT 1545M
SURFACE GRINDER

MULTIPLE FUNCTION
GAUGES

CNC TILTING
ROTARY TABLES

BMT 2000NCT
RADIAL DRILLING MACHINE
NC CONTROL+ ROTARY TABLE

PUNCH FORMER
(VERTICAL / HORIZONTAL)

BMT 430SEDM-ZNC
EDM (ELECTRIC DISCHARGE MACHINE)

BENIGN ENTERPRISE CO., LTD.
SUITE 4, 5F., NO. 20, TA-LONG ROAD, TAICHUNG, TAIWAN
TEL: +886-4-23233016
FAX: +886-4-23232826 / +886-4-23238341
E-mail: service@e-bemato.com

THE WINDS OF CHANGE

India's auto industry is in a state of flux like never before. As the industry weighs the pros and cons of its electric future and seek ways to adjust itself for the shift to clean-fuel technology, we get industry experts to talk on how ready we are to embrace e-mobility in India.

Source: Magic Wand Media Inc

REJI VARGHESE
Managing Director
Forms & Gears
fngreji@gmail.com

Visitors coming in from the Chennai airport into the heart of the city through Mount Road have to pass by a glitzy, glass fronted building that houses the Ashok Leyland corporate office. Just a few decades back that area was known as the 'Halda Junction' after a large typewriter factory situated there that employed hundreds of workers. Over the years, the market for typewriters vanished and so did that typewriter factory.

The market for typewriters just disappeared with the age of the computer and no matter how good one was at making typewriters, the machinery and technology required for the manufacture of typewriters was completely different from that required for manufacturing printers. The winds of change had blown the typewriter industry into oblivion.

A similar gust of wind blew through the engineering industry in 2016 when newspapers and TV channels across the country splashed the news that the Government of India had

Source: Toyota Kirloskar Motor Pvt Ltd

"Probably by 2050, we can get to 30 percent electric vehicles (EVs), which if we do, can be considered a success. 100 percent EVs is not possible in any country unless solid state battery technology or some other alternate technology can become financially viable.**"**

Shekar Vishwanathan
Vice Chairman
Toyota Kirloskar Motor Pvt Ltd

Source: Trumpf India Pvt Ltd

"We already have the manufacturing solutions to enable commercially viable mass production of EV components like batteries, high power electronic systems and electric drives. At Trumpf, we foresee an exponential increase in business with the evolution of EVs in India.**"**

Pradeep Patil
Managing Director
Trumpf India Pvt Ltd

announced it would be selling only electric cars by 2030.

2030 was just 13 years away. 100 percent electric cars meant no more cylinder blocks, cylinder heads, con rods, crank shafts, gear boxes - products that currently are the bread and butter of the engineering industry.

The Indian automotive industry has been one of India's strongest engines of growth and accounts for seven percent of the country's GDP. The industry contributes around 22 percent to India's Industrial GDP and 50 percent to its manufacturing GDP.

100 percent electric vehicles (EVs) would mean that in addition to direct job losses at the auto makers, the auto component makers, the forging and casting suppliers and smaller tier 2 and 3 suppliers, it would cause ripples upstream at steel, iron and mining industries and downstream in servicing, fuel supply, logistics etc.

After that bombshell announcement came a slew of reports questioning whether the ambitious target was feasible in India, whether EVs would truly solve the problem of pollution and carbon emission and whether there were more viable alternatives to consider before we committed ourselves to an electric future.

The history

Vehicles driven by electricity is not a new technology. The first electric car was made in 1837, decades before the first production of the iconic Ford Model T in 1908. In fact, in the early 1900s in the US, 40 percent of automobiles were powered by steam, 38 percent by electricity, and only 22 percent by gasoline. Electric cars continued being reasonably popular till the 1920s but as the road infrastructure improved and people needed to travel longer distances at faster speeds, the EVs of the day could not keep up and the concept died out.

The crowbar that broke the log jam - The resurgence of EVs

Though most of the major auto makers had dabbled in electric cars and some had electric cars in their portfolio, none of them had a model that was really able to sell on par with the Internal Combustion Engine (ICE) vehicles. All that changed in 2003 when a startup with no experience in the Auto industry turned up and shook up the industry with the release of the Roadster. The Tesla Roadster ran on a lithium-ion battery, which at the time was considered by most of the auto makers to be a technology that was still '10 years away'. The Roadster was the first production automobile to use lithium-ion battery cells and the first production EV with a range greater than 320 km per charge.

It was the success of Tesla that demonstrated to the auto makers that there was a pent up, mainstream consumer demand for more EVs.

When Tesla's Model 3 was unveiled in 2016, people queued up overnight to get a chance to book a car—a sight normally witnessed for rock music albums and iPhone releases. Within a week, Tesla had notched up 325,000 bookings worth over $14 billion. By August 2017, there were half a million bookings, and an average of 1,800 reservations were being added per day.

Even though there was pressure on the auto industry from the environmentalists to produce more fuel-efficient cars, it was the success of Tesla that demonstrated to the auto makers that there was a pent up, mainstream consumer demand for more EVs.

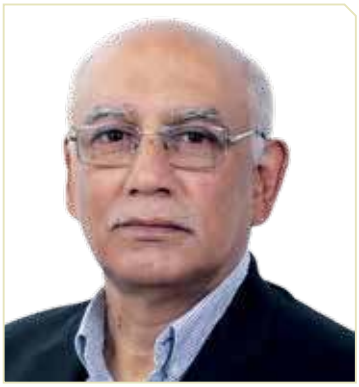
Bob Lutz, Vice Chairman, General Motors (GM), put it best when he said, "All the geniuses here at GM kept saying lithium-ion technology is 10 years away, and Toyota agreed with us—and boom, along comes Tesla. So I said, 'How come some tiny little California startup, run by guys who know nothing about the car business can do this, and we can't?' That was the crowbar that helped break up the log jam."

Views that matter

At the forefront of this tectonic shift are the auto makers, the auto component manufacturers and the machine tool manufacturers and each of these industries would face different challenges in the future.

On being asked why a country with 25 million vehicles sold annually would embark on such a drastic change and whether this target of 100 percent EVs by 2030 was feasible, Anil Bhardwaj, Managing Director, Mazak India, one of the world's largest machine makers, said, "I understand the compulsions of the Government to set such an ambitious target. India is a signatory to the Paris climate agreement and we are obliged to bring down our share of global emissions by 2030. Many of our cities are also amongst the world's most polluted, with vehicular pollution being a major cause. We also import almost all of our oil requirements, which is expected to touch a whopping $85 billion in 2018 alone. I think 100 percent EVs by 2030 may not be feasible considering that the support infrastructure that EVs need, like charging stations etc., is still at a nascent stage in India. Most of our power is still generated by thermal power stations which will not really bring down pollution levels. Yes, the pollution in the cities due to vehicular traffic would come down but unless we switch to cleaner, renewable forms of energy the overall emissions will not come down. In fact, they might go up considering the added power requirements to charge the EVs."

"Mazak has been on the forefront of pioneering machine tool technology for over 100 years. In fact, we have already geared up for the future with the development of a Hybrid Multi-tasking machine — Integrex i400AM — which is a combination of a 3D Printer and a Multi-tasking machine. This innovative technology is an alternative to conventional processing in terms of part design and machining and can be used by all types of industries including components for EVs. The EV evolution will not affect our business as in addition to the automotive segment, we have a significant presence in aerospace, oil & gas, power & energy and medical sectors too," he added.



Source: Hyundai Motor India Ltd

"When you disaggregate vehicle demand and examine individual subsectors, it appears that 100 percent adoption of electric mobility is feasible in two wheelers, three wheelers and four wheeler micro commercial vehicles by 2030."

BVR Subbu
Former President
Hyundai Motor India Ltd

Source: Mazak India Pvt Ltd

"We have already geared up for the future with the development of a Hybrid Multi-tasking machine—Integrex i400AM—which is a combination of a 3D Printer and a Multitasking machine which can be used by all types of industries including components for EVs."

Anil Bhardwaj
Managing Director
Mazak India Pvt Ltd

All geared up

Trumpf is the world's largest maker of sheet metal machinery and lasers for industrial manufacturing. Pradeep Patil, Managing Director, Trumpf India, is quite optimistic about Trumpf's prospects with EVs coming in: "EVs are rapidly changing the established paradigms of manufacturing and significant new demands are being posed by this change. As a machine tool company, Trumpf has been ahead of the curve and as of today, we already have the manufacturing solutions to enable commercially viable mass production of EV components like batteries, high power electronic systems and electric drives. All of these components require cutting, welding, surface processing and marking technologies with lasers on a variety of materials like aluminum, copper, and nickel, which is our core competency. At Trumpf, we foresee an exponential increase in business with the evolution of EVs in India."

Charging infrastructure needed

On the future of the Auto Component industry, Ananth Ramanujam, Director, Turbo Energy (a JV between the TVS group and Borg Warner Turbo Systems) and a leading supplier of Turbo Systems to the OEMs, said, "100 percent EVs would be unlikely by 2030 as the charging infrastructure is lagging behind. Estimates place EV penetration

Source: Turbo Energy Ltd

"100 percent EVs would be unlikely by 2030 as the charging infrastructure is lagging behind. Estimates place EV penetration by 2030 to be approximately 40 – 50 percent, most of which is likely to happen in the two- and three-wheeler categories.**"**

Ananth Ramanujam
Director
Turbo Energy Ltd

by 2030 to be approximately 40 – 50 percent, most of which is likely to happen in the two- and three-wheeler categories. Hybrids could be commonplace in the four-wheeler segments by then. ICEs will continue to power commercial vehicles (CVs), off-road applications (gensets, construction equipment etc.), and farm equipment (tractors, harvesters) for the conceivable future. Light-duty diesel applications could fade away in 15 years' time, while small gasoline engines could continue for a while longer."

"As ICEs would continue in CVs, tractors and off-road vehicles, engine-group auto component manufacturers would be kept busy for at least two decades. Turbo chargers, for example, would continue to be used in ICEs and Hybrid platforms to facilitate OEMs in meeting stringent emission regulations in the immediate future," he added.

Government support is crucial

Shekar Vishwanathan, Vice Chairman, Toyota Kirloskar Motors commenting on the feasibility of 100 percent EVs by 2030, said, "The target of 100 percent EVs by 2030 is not feasible given the lack of charging infrastructure, dependence of the Government on revenue from the ICE technology and the cost of batteries. EVs can achieve a maximum penetration of 10 percent by 2030 if the Government continues to give tax breaks etc."

"Probably by 2050, we can get to 30 percent EVs, which if we do, can be considered a success. 100 percent EVs is not possible in any country, unless solid state battery technology or some other alternate technology can become financially viable," he added.

When asked what would happen to the suppliers of forgings, castings and machining vendors of blocks, heads, crankshafts, con rods, gear boxes and their workforce who are dependent on ICEs, he said, "If the Government pursues EVs to the exclusion of other technologies be it fossil fuel, hydrogen or hybrid, investment in the ICE sector will be starved leading to higher costs for the economy in terms of lost employment. Existing suppliers of forgings, castings, cylinder blocks, heads, gear boxes etc. will not modernize their factories, leading to investment starvation."

On the future and what his advice would be to the auto component manufacturers and the machine makers who are currently heavily reliant on ICE components, Vishwanathan said, "The Government would be well advised to consider hydrogen technology in the longer run apart from strong hybrid technology immediately, which does not require additional investment and time in creating charging infrastructure which is needed for EVs. I would advise the auto makers and the auto component manufacturers to follow the consumer and study the degree of consumer acceptance of EVs before making any investment in the non-ICE sector."

"I would advise to study the degree of consumer acceptance of EVs before making any investment in the non-ICE sector."

BVR Subbu, Former President, Hyundai Motor India Ltd, had a different take on the matter: "When you disaggregate vehicle demand and examine individual subsectors, it appears that 100 percent adoption of electric mobility is feasible in two wheelers, three wheelers and four-wheeler micro commercial vehicles by 2030. I think adoption could be significant in the urban bus sector as well. But in passenger cars and light and heavy commercial vehicle trucks, there could be several challenges."

"If the Government creates an appropriate fiscal incentive regime and puts in place the required physical infrastructure including power transmission systems, particularly in urban agglomerations with populations of one million and above, at least 30 percent of new private cars registered, and 75 percent of new taxis sales could potentially shift to EVs by 2030," he added.

"The possibilities for buses is, however, far more promising. If the Government were to work towards building an urban bus network using a combination of large high-power trolleybuses on high-density, high-traffic routes along with 20 to 30-seater buses on feeder routes as part of the well-structured mass transit network including perhaps BRT systems, I think a 100 percent intra-urban electric bus network is feasible. As far as inter-urban passenger buses are concerned, fuel cell and alternate chemistry storage system-based products, if developed at the appropriate price points, could help

ensure adoption levels above 60 percent," opined Subbu.

"As far as LCV and HCV trucks are concerned, I expect that only those vehicles in utility services, and last mile logistics in urban areas could shift to electric. This proportion would probably be less than 10 percent of total new CV sales in 2030," he said.

On whether 100 percent EVs would be possible in India and what he thought would happen to the suppliers of forgings, castings and the machining vendors of blocks, heads, crankshafts, con rods, gear boxes and their workforce, he said, "I don't believe 100 percent EVs in India is possible with presently favored energy storage alternatives because of the extent of control that China presently exerts on the global supplies of strategic materials like lithium and cobalt."

"The IC engine has been consistently improving in terms of power to weight ratios. Today, 1.5 L engines producing 175 HP power and 300 NM torque with compression ratios of 12.5:1 are already a reality. These will help make IC engines relatively friendlier to the environment and increase their shelf life. But extremely high degrees of optimization in design will require a completely new dimension of metallurgy and machining capabilities, and obviously of process quality," added Subbu.

Which way the wind will blow and where the new technology would lead the auto industry to, no one can really tell.

"Component manufacturers who are able to acquire and absorb higher technology standards will obviously not have too many hiccups while adjusting to the changing demands of OEMs. I think the most critical concern of component manufacturers and machine tool manufacturers, who are currently reliant on ICE components, should rapidly acquire competencies in design and material technologies," he added.

On whether there was any other technology that could replace EVs as a viable, clean, and less polluting alternative in the next 10 to 15 years, he said, "In a world that is changing every day, and with concepts like hyper-loop moving beyond the drawing boards to reality, the innate innovative capability of humankind leads me to believe that EVs are but another stage in the evolution of mobility."

Adjusting the sails

For the auto makers, the auto component makers and the machine makers the winds of change have begun to blow. It is an immutable law that change will happen, technologies will change, and products and industries will become obsolete. The old will be replaced by the new. Which way the wind will blow and where the new technology would lead the auto industry to, no one can really tell.

But perhaps the best advice for an industry facing uncertainty and change is an old sailor's saying: "You can't change the direction of the wind, but you can adjust your sails to reach your destination".

REVOLUTIONIZING THE CRAFT OF CREATING

Additive Manufacturing has ushered in a revolutionary wave in the world of manufacturing. Dr Sanjay Joshi, Professor, Harold & Inge Marcus Department of Industrial & Manufacturing Engineering, PennState, offers an expert insight into the technology that has made traditionally used methods of making things seem a far cry from it.

Source: Magic Wand Media

Dr Joshi addressing the audience during the iMTduo Summit in Taipei

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

Additive Manufacturing (AM), as a manufacturing technology, has gained momentum in India for the last couple of years. How much potential does it hold for the Indian market?

Dr Sanjay Joshi: AM holds a vast potential for the Indian market. The market for AM and related products is expected to grow significantly over the next few years; several analyst projections put it at around $20 billion by 2020 with the total economic impact being even higher. Although the Indian manufacturing market tends to be more conservative and limited in spending capital, a large number of industries have started to figure out where AM can add value to the consumer and still be profitable to the provider. Already there are success stories in several areas: rapid prototyping; reduction in the design and manufacturing lead times; customized products in the dental, medical and healthcare domains; and improved functionality in design due to the ability of AM to manufacture complex geometries that cannot be manufactured by traditional manufacturing techniques in a cost-effective manner. The 'Make in India' initiative and the added investment in manufacturing that it brings should help this technology to further gain momentum in the country.

Due to its rapid prototyping applications, AM has lent itself to large-scale industrial applications. Which are the sectors that are expected to get a boost from the technology?

Dr Joshi: Worldwide, industries such as aerospace, defence and medical have been the early adopters of AM. They have already shown and established the benefits of using the technology. The pattern will be similar in India with the above industries being the first to adopt AM and experience the boost.

As is typical in the evolution of AM, the early use is often focused around rapid prototyping and enabling rapid validations

of design to reduce the product development time and become more responsive to design trends. The next step up is creating one off parts – these are often customized parts where the cost of traditional manufacturing is quite high. Hence the sectors that deal with this – medical, art, decorative consumer products – can get a boost from this technology. Industries that rely on tooling such as casting can benefit from making patterns or even directly printing sand moulds to enable low volume production. Aerospace industries are often under constraints to reduce weight, and AM technology can provide help in manufacturing low-volume, complex and light-weight parts that cannot be easily manufactured by traditional machines and manufacturing processes.

AM is gradually evolving and moving beyond prototyping. It is slated to be implemented for mass-scale customization and personalized implants and prosthetics. How far, do you think, India has reached in this endeavor vis-à-vis its global counterparts?

Dr Joshi: My general sense is that India is lagging behind in this endeavor. We are starting to see foreign companies throughout the AM supply chain – from powder manufacturers, software developers, machine builders and resellers, part manufacturers – collaborating with Indian entrepreneurs to accelerate bringing this technology to India. There are increasing number of 3D printing HUBs in India, and as the accessibility of the technology grows, skill gaps both at the design and manufacturing stages of AM will reduce. The rate at which these gaps can be closed depends upon the accessibility and availability of the technology.

Source: Magic Wand Media

"It is important to start looking at where additive manufacturing can provide the benefit and how it can be monetized throughout the life cycle of a product."

Dr Sanjay Joshi
Professor
Harold & Inge Marcus
Department of Industrial & Manufacturing Engineering
PennState

What are the challenges in implementing the AM technology, especially in an MSME or SME set-up?

Dr Joshi: The typical challenges in implementing AM technology in such a set-up are:

Cost of the equipment and maintenance: The startup costs can be quite high, especially when dealing with production-grade machines, metal AM machines, which then require a large enough use to keep the machines from sitting idle. Small manufactures may not be able to generate enough work to keep the expensive machines busy. The maintenance cost of the machines is also quite high. This can make it difficult for small manufacturers to use AM profitably in a cost-driven manufacturing environment.

There are increasing number of 3D printing HUBs in India, and as the accessibility of the technology grows, skill gaps both at the design and manufacturing stages of AM will reduce.

Lack of training and knowledge: This is a new technology and there are not enough trained workers and engineers who understand its nuances. They lack the expertise to deal with the problems and to advance the state of manufacturing using this equipment. To be successful at AM, it is not just the AM technology, but the whole design workflow which needs to be impacted and revisited. The level of training in 3D modeling, simulation and topology optimization needs to be improved to take full advantage of the technology.

How can the adoption of AM help up the game of its end-users in terms of ROI – investment, savings and productivity?

Dr Joshi: The key here is to start looking at ways in which AM can add value to the company. Using AM just to manufacture parts that are currently being mass produced is a losing proposition. The costs of mass production are hard to beat. So it is important to start looking at where AM can provide the benefit and how it can be monetized throughout the life cycle of a product. AM has added value in the areas of weight reduction in airplanes, which directly translates to fuel savings over the life of the airplane; consolidation of assemblies into single parts which leads to savings in inventory and procurement costs; customization of medical implants which leads to improved healthcare and cost-effectiveness; and development of new materials that improve product performance etc. It is this value provided by AM that needs to monetized in order to determine how it might impact the ROI. It's not going to be as simple as the traditional ROI analysis.

Source: Magic Wand Media Inc

TAKING TIES TO A **NEW LEVEL**

India and Spain's striving to strengthen their bonds at the bilateral level is bound to reap rich dividends for both the countries. A look at how EU's third largest economy is contributing to the growth of India's manufacturing industry...

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

It's been more than 60 years to the diplomatic relations of India and Spain. The association has evolved over the years and now more efforts are being invested by the duo in order to enhance their current status of bilateral economic give and take.

The forming of the new Indian government in 2014 was the precise turning point in the bond shared between the nations. The new government's impetus to export industries along with significant investment in infrastructure and urbanization have opened up avenues for Spanish companies with relevant expertise to become India's partners and contributors to Indian flagship initiatives such as 'Make in India' and 'Digital India'.

Machine Tool sector in Spain

Mikel Artola, International Manager, Machine Tools, Accessories, Component Parts and Tools manufacturers' Association of Spain, AFM Advanced Manufacturing Technologies, offers an overview on the machine tools sector of Spain and the opportunities that it presents to its counterpart in India.

"The advanced manufacturing and machine tools sector closed the 2016 financial year with a 1.5 percent increase in its production with respect to the 2015 data, amounting

to €1.5 billion. "The different subsectors—metal cutting, metal forming, components, tools, accessories and machining—experience small changes but the panorama has not changed very much," says Artola. "Stability in the figures is a persistent trend in the Spanish machine tools sector," he adds.

Spanish companies have gained a significant experience in foreign markets with 79.16 percent export rate in 2016, and an average 77.89 percent in the last five years, informs Artola. "In 2017, India was the 10th largest market (€26.5 million) for Spanish machine manufacturers, which was a promising growth as compared to previous years (73 percent more than in 2016). However, 2012 witnessed a peak with India being the 4th largest market for Spain and generating business worth €45.7 million," he adds. For Spanish component manufacturers, India stands remarkably as their 7th largest market, absorbing four percent of their exports.

Manufacturing machines in collaboration

'Make in India' is a key policy that will contribute to the development of Indian manufacturers, and foreign companies have to look for opportunities to leverage this new framework, Artola believes. "Spanish machine tools industry is remarkable in its flexibility and adaptability to different sectors and applications, and in its specialization in big-sized and high-performance solutions. This suits well with Indian industries' demands, so mutual collaboration will be beneficial for both sides," he notes.

Additive manufacturing in Spain

Manufacturers all around the world have realized the significance of the fourth industrial revolution and how important is to embrace the advanced technologies to retain their competitive edge. Similar situation is in Spain where the machine tool manufacturers are striving to upgrade themselves technologically. They are increasingly integrating digitalization to offer newer services to their customers.

Source: AFM Advanced Manufacturing Technologies

"'Make in India' is a key policy that will contribute to the development of Indian manufacturers, and foreign companies have to look for opportunities to leverage this new framework.**"**

Mikel Artola
International Manager
Machine Tools, Accessories, Component Parts and Tools manufacturers' Association of Spain
AFM Advanced Manufacturing Technologies

Artola provides a glimpse of the Additive Manufacturing (AM) scene in Spain with the names of the companies that are into it along with their recent developments. ADDIMAT represents the AM industry of Spain and, together with its members, is promoting advanced technologies and raising their awareness among industry. "Additive equipment providers of Spain are continuously developing new machines, one example being IBARMIA which is improving the laser metal deposition process integrated on its hybrid machine," explains Artola.

In 2017, India was the 10th largest market (€26.5 million) for Spanish machine manufacturers, which was 73 percent more than in 2016.

ADDILAN is a recently established additive machine manufacturing company for the production of medium-large parts using WAAM. Dynamical Tools has developed a new 3D Selective Laser Sintering printer. Grupo Sicnova has launched new products, including the JCR 600 – a large format industrial FDM 3D printer, and the CloneInspector 3D – an automated cabin for three-dimensional measurement. Last but not least, service providers such as Optimus 3D, Mizar and Verot have acquired new industrial AM machines to cater to the growing customer demands.

BIEMH 2018

Artola is quite upbeat about the upcoming BIEMH, a biennial trade show in Spain focused on the machine tool industry, "BIEMH is expected to have a thrilling and unique edition in 2018 due to the strong market situation. It is the largest industrial event in Spain and one of the most important machine tools exhibition in Europe, occupying six pavilions, and with more than 1,500 exhibitors, 2,600 products and 1,100 machines."

The show will be held at Bilbao Exhibition Centre in Bilbao, Spain from May 28 to June 01. The five-day event will gather leading international companies working in the fields of machinery, process automation, tools and components and metrology. These companies will showcase the widest range of technologies to date, live smart manufacturing experiences and innovative solutions that will help business grow.

"BIEMH 2018 will be featuring parallel shows – BE DIGITAL, ADDIT3D and WORKinn – with the view to focus on the fast growing new trends to strengthen the complete value-chain of the industry," he informs summing up.

THRIVING BEYOND **BORDERS**

The EMAG Group's enormous growth can be attributed to its strategy of continuous expansion. With its Indian subsidiary, the Group has ensured that the demands of its customers for its state-of-the-art manufacturing solutions are well taken care of.

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

The EMAG Group, with its headquarters in Salach, Germany, has earned a prominent position globally, owing to its experience and expertise in offering the best manufacturing solutions for precision metal components.

The group has stretched far and wide, offering just the right machines for a slew of metal cutting applications including soft and hard turning, grinding, drilling, hobbing, milling, welding, electrochemical machining, induction hardening, joining etc. "This allows us to plan and execute huge and complete turnkey projects," states Andreas Zieger, Director, Operations, EMAG India Pvt Ltd. Although EMAG has been present in the Indian market since the late 1980s, it was in the year 1996 that the country branch office – EMAG India – came into effect. Today, with its headquarters in Bangalore, it has become a fully functional market company and a technology center. It is supported by branches in Noida, Gujarat, Pune and Chennai with the view to offer best services and sales in the country. With the growing demands of the customers worldwide, EMAG has now 39 branches all over the world in six continents.

Prime sectors in Indian market

Automotive, machine tool manufacturing and oilfield as well as manufacturing of components make for EMAG India's core markets. EMAG is a trendsetter in the field of vertical turning centers, multi-spindle machining centers and multi-functional production machines, and has become an important partner in the realization of complete process streams in the manufacture of automotive transmission, engine and chassis components.

"Due to the demand of mass production of high-precision parts, the automotive industry is a

EMAG Group headquarters in Salach, Germany

Source: EMAG India Pvt Ltd

challenge as well as an opportunity. 80 percent of our business comes out of that sector," informs Zieger.

India is an important market for EMAG since the country has its own top car OEMs and nearly all international OEMs are now targeting the market. The company works with OEMs and further down in the supply chain with international tier 1 component suppliers and their sub suppliers. "We develop complete lines for OEMs who want to gain on their technology leadership, and we also work with big component suppliers to develop stable processes with their sub suppliers. Our customers know our abilities and often come with their raw parts to us and we deliver solutions for their mass production," he says. In the aviation industry, the company has been successful at a technology used in the mass production of the turbo charger for modern small-sized combustion engines.

Large range of solutions for batch and mass production

"With the aid of local teams, we offer special machine solutions like for instance for CV joint milling or exotic joining machines for high-precision mass production of cam shafts or gear shafts. Along with our international teams and based on our global experience of the challenging OEM world, we can support our customers in India with complete lines from raw parts to marked and 100 percent finished parts in the mass production of brake discs, diff cases, welded fly wheels, pistons and turbo charger parts," Zieger divulges.

"Our standard vertical pickup turning machines are ideal for soft and hard turning mass production, and are at the entry level of the high-quality, automated machine world. These machines are known for high accuracy, long machine life and trouble-free production. Here the focus was to integrate the automation and make it flexible to link the machines to various lines and rearrange them later on," he adds.

Source: EMAG India Pvt Ltd

"Unlike many machine tool sellers who sell out of catalogue, it is essential for us to analyze the whole production process of our Indian customers and find them optimum solutions."

Andreas Zieger
Director, Operations
EMAG India Pvt Ltd

Thanks to its multitude of machining and automation technologies and extensive knowledge in process design, the EMAG Group can handle demands of the manufacturers of medium-sized component batches too who also want "solutions from a single source".

Ways to ramp up

Zieger believes that there is a lot of hype around Industry 4.0 at this point. "In mass production, 85 percent availability of machines is required and hence, we must target the underutilized invested capacity if we consider ramping up. Measuring, analysing, connecting and optimizing by yolking the mechanical world of machine tools with IT and Big Data will give the next push in the direction of cost saving," he notes.

India is an important market for EMAG since the country has its own top car OEMs and nearly all international OEMs are now targeting the market.

EMAG is focused on providing machine information and additional sensors with equipment. On one side, it is reaping benefits with its turnkey solutions and on the other, it is working actively with industry advisory boards to develop some standards to link more elements to benefit its customers. "We are considering the data safety aspect too, which is currently a very strong topic in Germany," says Zieger.

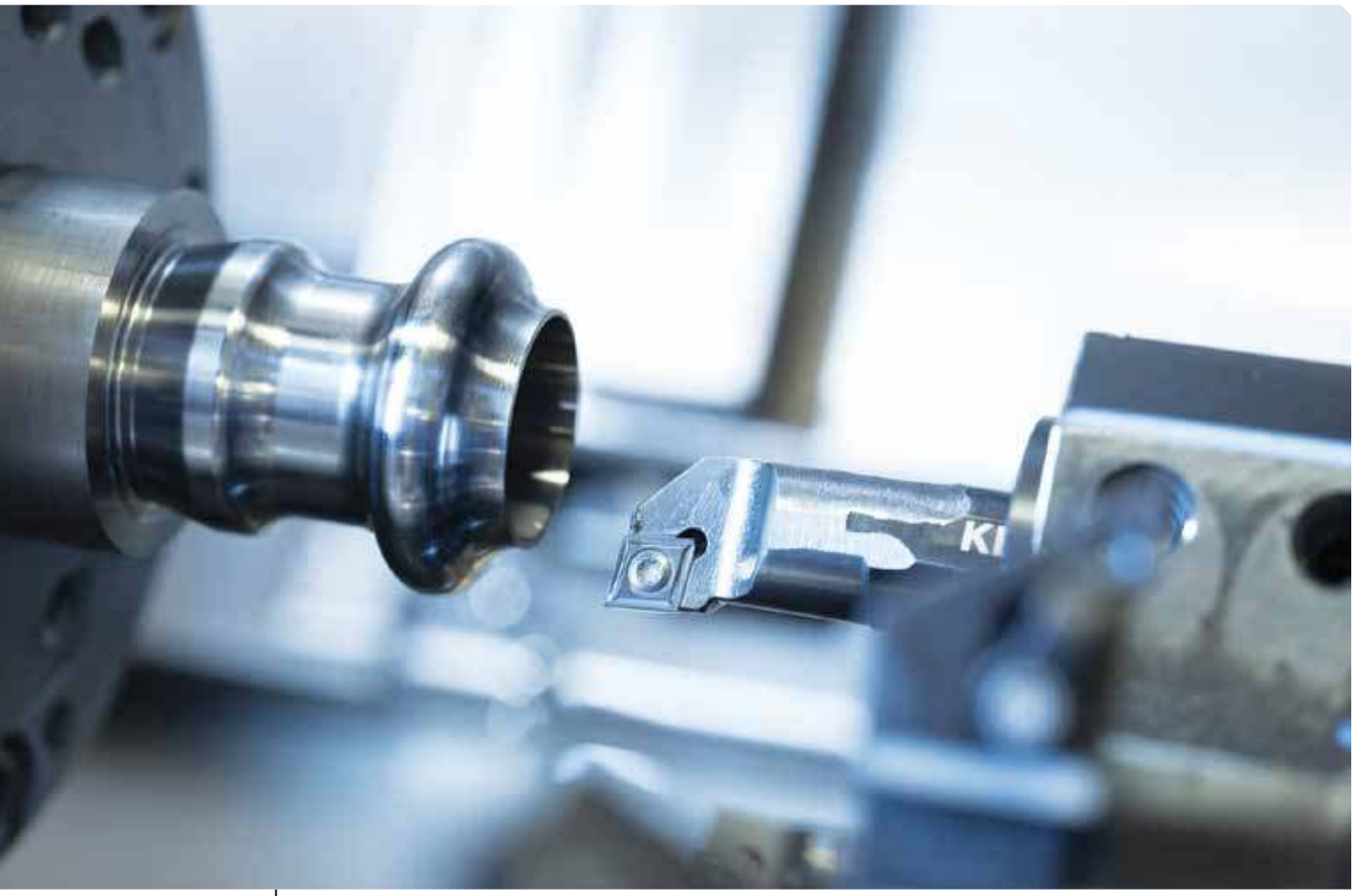
"At the moment, we are keenly working on our user interface to simplify machine operations. We are gathering machine data to create additional information and value for customer. This will help in optimizing operations by providing faster information about the machine status to support our service," he informs. This is being done through an application. Options are also available to find and display additional product and process information which, he claims, will save time.

EMAG customer training courses

Zieger is happy with the quality of the training offered in India. "Our EMAG training is primarily for the application we offer with our machines for the setting of specific parameters," he explains. There is a special training program available on EMAG parameters, which varies from machine to machine. "A detailed maintenance training is also proffered to maintain the machine tool in the right way so that customers can make the most of our machines for decades. And most important is the operator training, because at the end we sell tools and only trained operators can make good products out of good tools," sums up Zieger doling out a manufacturing maxim.

PUSHING THE LIMITS

Össur uses high-performance DMG MORI CNC machines in an efficient complete-machining process to produce complex components for state-of-the-art prostheses.



Source: DMG MORI

The stability and performance of the DMG MORI machines enable high precision for complex prosthetic components made from aluminum, steel or titanium.

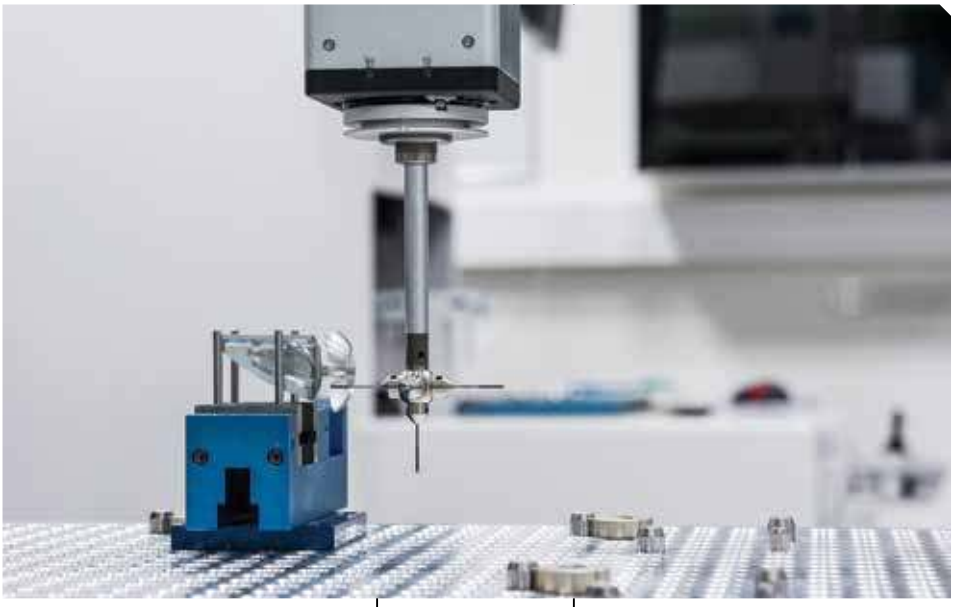
As one of the world's largest and most innovative manufacturers of prostheses, Össur ensures patients regain maximum mobility following an amputation. From the prosthesis shaft and associated silicon liner, to the smart knee joint, to the carbon foot, the high-tech components contain so much know-how that their development process remains highly confidential. And as they relate to expensive premium products used for medical purposes, the highest quality standards apply right from manufacturing. Össur fulfils these in its machining work by using modern equipment made by DMG MORI. Twen-

Source: DMG Mori Seiki Co, Ltd

ty-five experienced workers create complex aluminum, titanium, stainless steel and plastic workpieces at eight turning centers, including two CTX beta 1250 TC for turn & mill operations, and three DMU eVo 60 linear.

Össur's slogan – Life without Limitations – summarizes what Larus Gunnsteinsson, Product Designer, Össur, expects of the products: "We want our prostheses to enable amputees to live as normal a life as possible." Which is why, he adds, they do not consider themselves to be in competition with other manufacturers. "We are instead in competition with the human body." The qualified shoemaker joined Össur after completing advanced studies in Sweden, and later founding his own orthopaedic shoes company. When Össur bought this company, together with its staff and expertise, it prompted a new phase of creation: "I knew practically everything about the human foot. Developing prosthetic footwear was a challenge I welcomed."

The development work performed by Gunnsteinsson and his colleagues produced an entire range of prosthetic feet for varying degrees of mobility – from occasional use for older patients, to everyday use for active people, to elite sport. Icelandic javelin thrower Helgi Sveinsson, long jumper Markus Rehm and sprinter and long jumper Vanessa Low are just three of the prominent figures to consistently achieve personal bests with their blades (the name given to the carbon springs) during the Paralympics and world championships. But the main focus is on patients wanting to minimize hassles in their everyday lives. "We're constantly working on optimizing prosthetic feet so that their mobility and rolling characteristics are as similar to real feet as possible," says Gunnsteinsson, adding that today's products have already made great progress in this area.

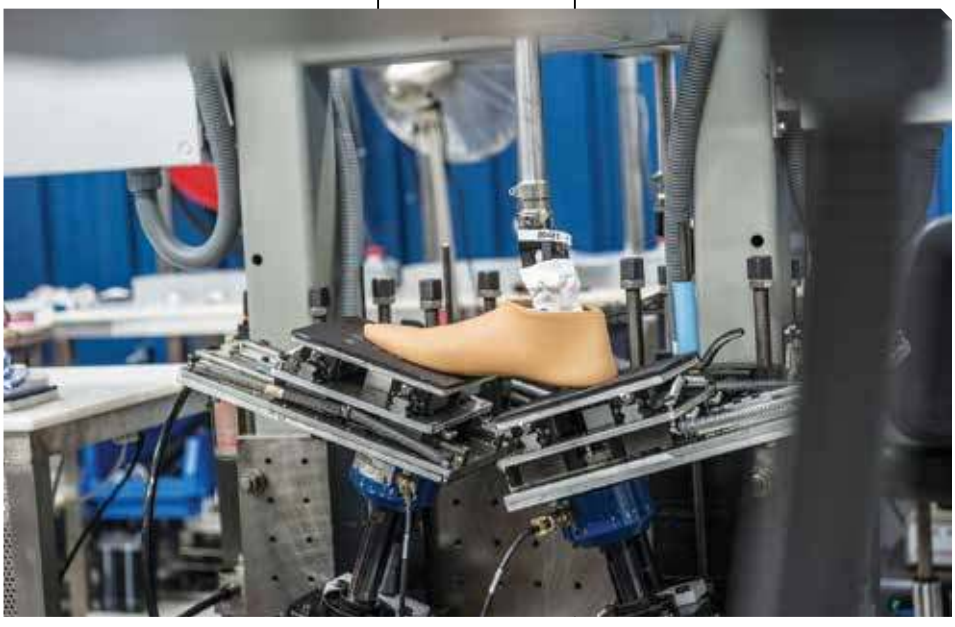


Source: DMG MORI

The manufacturing process ranges from CAM programming, to machining, to dimensioning. Aluminum components are also anodized.

Strong machinery for maximum performance

While the carbon plates in the prosthetic feet help with walking by absorbing and restoring energy, the silicon liners ensure the prosthesis connects firmly to the leg stump, and is comfortable to wear, by reducing friction between the prosthesis shaft and the skin. The rest of the prosthesis is made from very lightweight but strong aluminum, steel, titanium and plastic components which help with stability and reliability, and thus ultimately guarantee user



Source: DMG MORI

The prosthetic feet are extensively tested before being approved for the market.

mobility. Machining, where Gunnar Eiríksson and Hrafn Davíðsson work as supervisors, is thus a top priority at Össur: "Producing complex workpieces requires high performance and strong machines," - a combination they found many years ago at DMG MORI.

The machinery fleet has continued to grow and is currently at 12 models. Apart from three DMU eVo 60 linear, production is primarily dominated by the machine tool manufacturer's turning centers: three CTX beta 800 4A, two CTX 1250 TC and two TWIN models – predecessors to the current SPRINT automatic lathes. An NEF lathe and a DMU monoBLOCK processing system were installed as part of the development work. "We notice the machines' strength every day because our components push them to their limits," says Eiríksson, who also mentions how the low-vibration machining enables them to efficiently manufacture precision parts, with tolerances often down to the one hundredth.

Productivity through automation and complete machining

High demand is another reason why manufacturing needs to be efficient and, most importantly, productive. "We machine around 2,300 workpieces a day. Batch sizes are usually between 500 and 1,000 parts," Davíðsson explains. Permanent further development also means new components are constantly being produced. "As soon as a new design has been developed, we're able to deliver a finished product within two weeks." According to Davíðsson, the production department works at full capacity, from design and CAM programming, to machining, to dimensioning and anodizing the aluminum components. The team handles the production capacities with two day shifts and an unmanned nightshift – which explains the machines' consistent automation. Bar feeders replenish machining supplies, while robots stock the DMU eVo machines.

Complete machining is another major focus area for Össur. The CTX beta TC milling and turning centers are thus particularly important, as Eiríksson describes: "We use these models to create complex geometry, which previously required multiple operations on two machines." The lack of manual retooling increases quality, and also results in impressive time-saving. "Optimizing throughput times is one of our top priorities. Reducing machining by even just a few seconds makes a considerable difference in large volumes," Davíðsson adds.

A global presence

The technological potential and professional expertise in production extend even further. Gunnsteinsson cites mould design as an example: "Our lifelike foot covers are made from EVA foam, which – just like in sports shoes – has cushioning properties." These feet would be manufactured using the injection-moulding process. "Injecting EVA foam is an art mastered by only a handful of companies around the world," which is why Össur co-operates with experts in Italy. "The Italians have a lot of experience with that material, and there are also logistical advantages," he adds.

Iceland's remote location means Össur has established a good logistics network with large warehouses in the Netherlands, the USA and Shanghai. It will be increasing its production capacities for the vast American market (which makes up 65 percent of its volume) by setting up a production facility in Mexico. "The facility will be an exact copy of what we have here," Gunnsteinsson explains. Eiríksson is also already thinking ahead for the head office: "As our capacities continue to grow, we also need to keep upgrading and modernizing the production plant. Given our positive experiences with the CTX beta TC models, we'll continue to follow the trend towards complete machining."

Source: DMG MORI

Prostheses have developed so much that they enable a high degree of mobility even for active people — including in elite sport, as is the case with javelin thrower Helgi Sveinsson.

"Producing complex workpieces requires high performance and strong machines," – a combination they found many years ago at DMG MORI.

MEASUREMENT ERROR

MEASUREMENT PRECISION

AMEE 2018
13th INTERNATIONAL MACHINE TOOLS EXHIBITION
An AIEMA Initiative

Visit us at:
Stall No. B122
Hall No. B

The Marposs **WRP60** radio frequency system automatically detects axis position to enable part inspection on large, 5-axis milling machines and machining centers and applications producing deep parts. You get improved quality and reduced scrap. **Marposs means precision.**

www.marposs.com

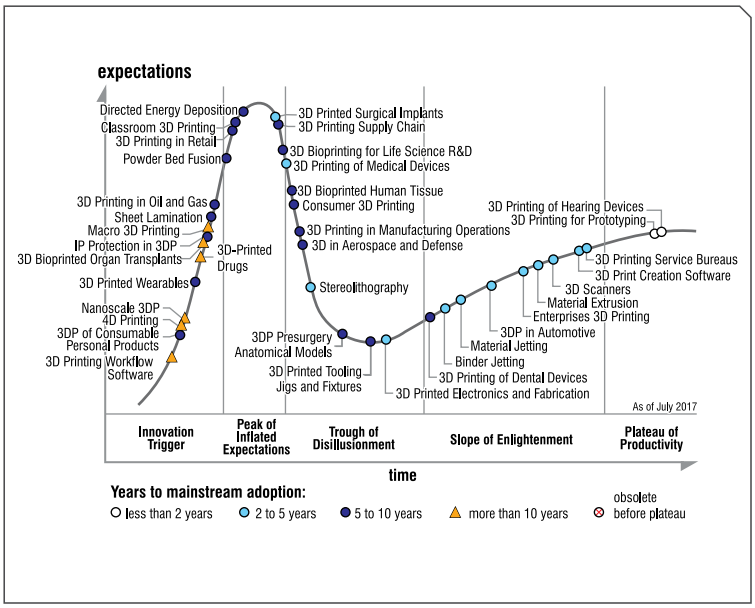
MARPOSS

YOUR GLOBAL METROLOGY PARTNER

MARPOSS INDIA Pvt. Ltd. 147, Sector 7, IMT Manesar 122 050 - Tel. +91 124 4735700 | sales@in.marposs.com

A GAME CHANGER FOR THE MANUFACTURING INDUSTRY

Additive manufacturing is all set to take center stage as manufacturers unfold its potential to revolutionize the production process. However, certain challenges remain to be addressed before its widespread adoption.



Source: Gartner 2017

Figure 1: The Gartner's Hype Cycle shows how AM technology and applications will evolve over time, thus managing its deployment within the context of business specific goals.

Companies today are increasingly resorting to Additive Manufacturing (AM) or 3D Printing due to a number of reasons that include cost saving, product customization, shorter time-to-market, unique designs and small series production. The break-even point where AM becomes more cost-effective versus conventional manufacturing could range from 50 to 5000 parts, depending on factors such as industry, application and material. The long-tail requirements of a diverse marketplace ranging from medical devices and manufacturing tools to special purpose machines and spare parts can more effectively be addressed via AM.

AM's role in achieving business goals

The Gartner's Hype Cycle, which is revised every year, is an excellent broad indicator of maturity and adoption of technologies and applications and how they are potentially relevant to solving real business problems and exploiting new opportunities. Figure 1 shows how AM technology and applications will evolve over time, thus managing its deployment within the context of business specific goals.

According to a Roland Berger study, as of 2014, the metal AM market was still less than one percent of the machine tool market and is expected to grow anywhere between 2x to 7x by 2020, largely driven by a rapid growth in the adoption of 3D printing in the manufacturing sector. And with increased competition (leading to innovation), expiry of key patents (such as EBM technology), investment by big players (General Electric, HP, etc.), and the adoption of the technology for serial manufacturing of end-use parts (Siemens, Airbus, GE, etc.), the metal market is expected to grow exponentially in the next three to five years.

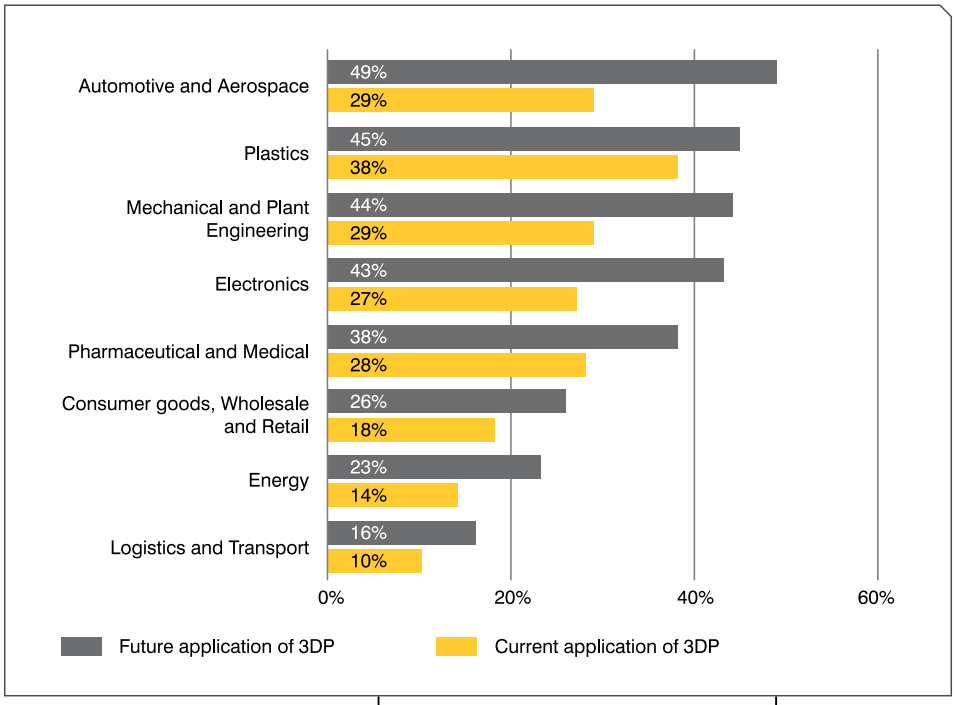
Different technologies may be used based on material, end application, part specification, function and volume, cost and availability of other alternatives. Key drivers for AM adoption could be based on:

- value addition to the application (achieving higher complexity, lead time reduction, weight reduction, component consolidation), versus
- value addition to the process (lower volumes, no tooling costs, on-demand production, inventory reduction).

Huge potential of AM in various sectors

As long as the applications are carefully selected so that the added value is derived from the process, the potential for AM in the manufacturing industry is huge. Several sectors such as aerospace, automotive, medical devices, dental, footwear, electronics, consumer goods, jewelry, farm and construction equipment, tire, industrial com-

VISHWANATH GODAVARTY
Regional Account Manager
(India, South Asia)
Materialise Software
vishwanath.g@materialise.com.my



Source: Ernst & Young

Figure 2: Current applications and future potential of AM in the industry

ponents, and tool & die have been successfully using AM although the applications are largely limited to prototyping. Some sectors like hearing aid devices have successfully transitioned to using AM for mass production, or rather mass customization needs. The chart in Figure 2 (based on a survey by the global consulting firm Ernst & Young (EY)) shows current applications and future potential of AM in the industry.

Overcoming challenges

As with any emerging technology, there are challenges towards a wider adoption of AM in the manufacturing industry. The top ones are:

- High system costs
- Lack of qualified expertise
- High cost of materials and services
- Product quality concerns
- Size, material and speed limitations.

However, through continuous innovations in machines (multi-laser, automation, and integration concepts), materials (multi-material, amorphous metals, third party suppliers), software (simulation, automation, process monitoring and control), post-processing (micro-machining, CT) and services (high-end repair, mobile), vendors are helping to alleviate these challenges. All this will lead to reduction in AM part cost and significant growth in the AM market. Post-processing is a major cost driver in metal AM wherein the post-processing effort alone could be just a fraction of the AM process and material costs or in some cases, several times the AM cost. It's highly part, application and material dependent. It's important to consider this during the business case justification in metal AM. However, this could also be avoided by optimizing the design for AM.

AM future is serial manufacturing

Nowadays, AM is widely used for prototyping of metal and plastic parts and the technology can be considered fairly mature for such use-cases. However, the future of AM lies with Direct Manufacturing. For maximum impact, AM must be used in serial production of end-use functional products. But certification of the AM process is not easy and there are few qualified international standards available. This makes it challenging to set up an AM process matching mass manufacturing requirements. According to a survey by EY, 38 percent of companies by 2021 expect to use AM for the production of end-use parts, with Germany being the most conservative while China and South Korea being the most optimistic in such applications. The chart in Figure 3 compares the adoption of AM for prototyping vs. serial production type applications.

According to a survey by EY, 38 percent of companies by 2021 expect to use AM for the production of end-use parts.

Core functions to be benefited by AM

Another survey by EY, covering more than 900 companies across 12 countries (both mature and emerging markets) in nine industries, showed the core functions/departments expected to be benefited by AM in the next five years (see chart in Figure 4). Among all functions, the R&D and Engineering departments led the way in driving the adoption of AM within their respective organizations, followed by the Production department and the rest.

Companies that have adopted AM can be classified based on their maturity level in doing so (see chart in Figure 5a):

Level 1 – very little experience or awareness
Level 2 – department level experimenting with no central structured approach
Level 3 – clear direction and integration of AM into operations at department level

The mindset to adopt AM and application specific know-how is key and can only be achieved via the right partners and with the right investments.

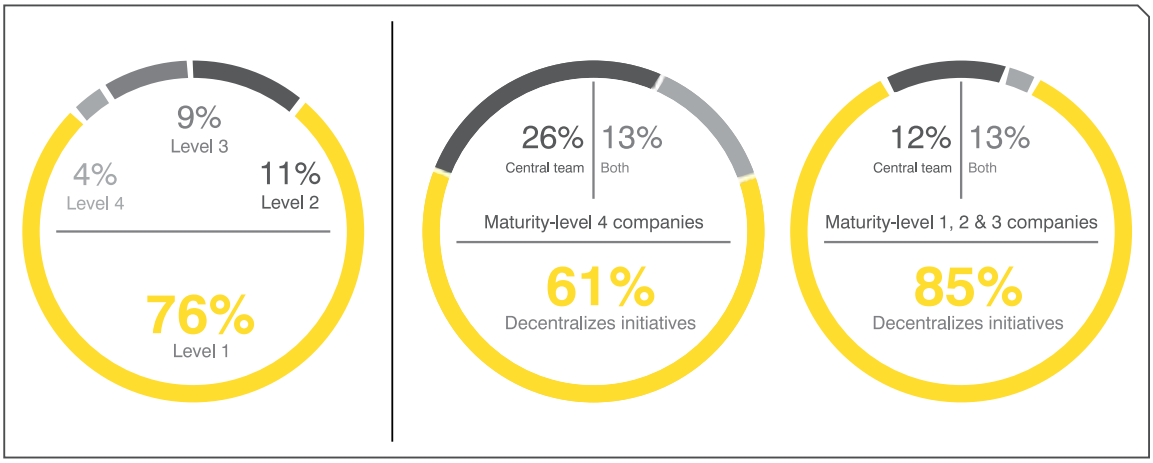


Figure 5a: Companies that have adopted AM can be classified based on their maturity level in doing so.

Figure 5b: Level 4 companies differ from others by having a central team involved in AM with sponsorship directly coming in from the top management and recognition of AM as central to corporate strategy.

Level 4 – strategic and centralized adoption of AM with C-level sponsorship and support.

Level 4 companies differ from others by having a central team involved in AM with sponsorship directly coming in from the top management and recognition of AM as central to corporate strategy (see chart in Figure 5b).

Gains abound

In summary, the benefits of AM are:

Lower costs: Cheaper or zero tooling, lesser transportation, lower warehousing, less working capital;

Better/unique design: Free complexity, added features such as cooling channels, porous structures, lattices, conductivity, etc., light-weighing, less assembly by integrated design;

Customization: Ergonomics, organic designs, body contours, (external/internal), unique product interfaces, aesthetics;

Sustainability: Less waste, light weight, less fuel consumption, efficient supply chain, lower handling/transportation costs, life cycle analysis;

New business models: Shorter time-to-market, small series, supply chain disruption (on demand, on location), services, co-creation and co-engineering.

And the above benefits are already being realized to varying degrees by manufacturing industries in applications such as spare parts, structural components, design and styling, production tools, jigs, fixtures and assembly aids, tool repair, part consolidation, high performance parts, scale/concept models, one-off or small series end-use components, moulds, casting master patterns, production line applications such as grippers, nozzles and brackets and many more.

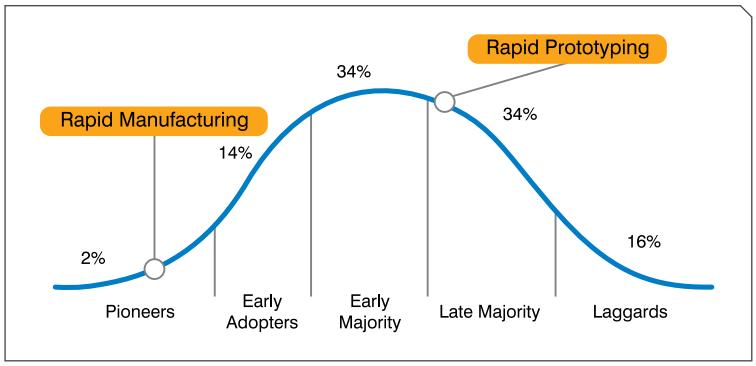


Figure 3: Adoption of AM for prototyping vs. serial production type applications

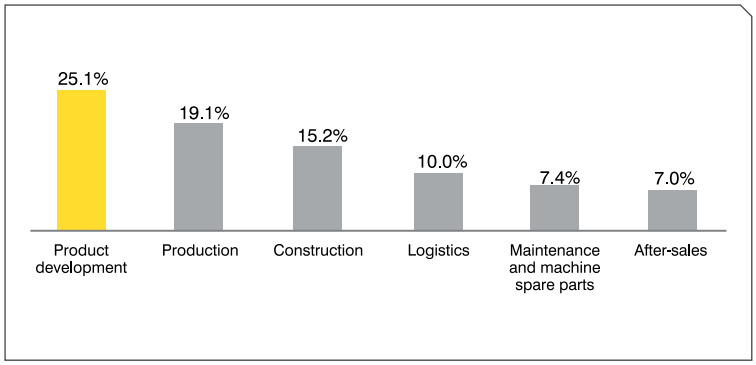


Figure 4: Core functions/ departments expected to be benefited by AM in the next five years

LMW®

JV30
Drill Tap Center

JV40
Compact Vertical
Machining Center

JV 80
High Speed
Die Mould Vertical
Machining Center

FINEST RANGE OF MACHINING CENTERS

JV 55 Twin
Twin Spindle
Vertical Machining
Center

JHM 40
Horizontal
Machining
Center

JU 40
5Axis (Simultaneous)
Machining Center

Visit us @

ACMEE 2018
13th INTERNATIONAL MACHINE TOOLS EXHIBITION

21-25 June, 2018
Chennai Trade Centre,
Chennai, India

Hall No : B
Stall No : B110

- Drill Tap Centers
- Vertical Machining Centers
- Die Mould Vertical Machining Centers
- Twin Spindle Vertical Machining Centers
- Moving Column Vertical Machining Centers
- Horizontal Machining Centers
- 5 Axis (Simultaneous) Machining Centers

and many more to follow...

Integrated Solutions!

Follow us on
YouTube LinkedIn
www.lmwcnc.com

TURNING
MILLING
TURNMILL

LOOKING FOR AGENTS in VIETNAM

Contact: prashant.godse@lmw.co.in / arunkumar.s@lmw.co.in

Ball bearing in blue grease

Source: Lodestar UM

WHY **RELUBRICATION** MATTERS

Regreasing becomes highly essential for ensuring operational benefits. Knowing the right and reliable lubricants and the frequency with which they should be used can come in terrifically handy.

Source: Lodestar UM

Rolling element bearings, often called as bearings, are one of the most common components found in modern day machines. They find their applications in a variety of equipment ranging from electric motors to gearboxes as well as conveyor systems, and can be broadly categorized into – Ball bearings, Cylindrical roller bearings, Spherical roller bearings, Needle roller bearings, and Tapered roller bearings.

When oil flows, orders flow.
When orders flow, money flows.

Your machines don't just make components. They make profits.
To see how Mobil™ can make your business flow with its cutting-edge range of industrial lubricants, visit **mobil.com/industrial**

Mobil™

Industrial Lubricants

Advancing Productivity™

ExxonMobil Lubricants Private Limited
Bengaluru - 560048, India
Toll-free no.: 000-800100-8401 | indialubeline@exxonmobil.com

Energy lives here™

These bearings undergo a regimented lubrication program which involves timely relubrication to replace grease that has deteriorated, leaked away, or become contaminated. It takes on the spot know-how backed by expertise to determine the relubrication intervals in rolling element bearings owing to the varying conditions these components operate under.

Determining relubrication frequency

The question that now arises is – how often should one relubricate rolling element bearings? There isn't a specific answer to this question since there are numerous factors that influence relubrication frequency.

Generally, the smaller the bearing and faster the speed, the less frequent is the interval for relubrication. For instance, ball bearings have a base interval for relubrication, whereas for a cylindrical roller, the relubrication frequency is almost five times more, relatively.

Some of the factors that determine the regreasing interval of the bearings are as follows:

Operating Temperature:

Higher temperatures increase a grease's oxidation rate, doubling it for every 18°F (10°C). For example, a bearing operating at 250°F (120°C) will require greasing 10 times as often as one operating below 150°F (65°C). Grease softens as temperatures increase and may become fluid enough to leak out of the housings.

Environmental Conditions:

Environmental conditions that subject bearings to contamination add on to the relubrication frequency. Bearings exhibit unusual conditions such as excess heat emission, noise, leakage, vibration, etc. under such conditions.

Adding Grease between Flushing Intervals:

Many rolling element bearings require relubrication with small quantities of grease between grease flushing intervals. If the seals are in good condition, the quantity of the grease needed may be small and infrequent.

Having factored in the causes that determine relubrication intervals and accelerate the process, the immediate requirement to be addressed is the way in which relubrication challenges can be mitigated.

Greases for relubrication

ExxonMobil™ offers premium greases for rolling element bearings that promise effective relubrication. Some of them are:

Mobil Polyrex™ EM Series

The advanced thickener formulation and proprietary manufacturing techniques of Mobil Polyrex EM Series provide improved bearing performance and protection for long electric motor life. These greases are recommended for long-life lubrication of electric motor ball and roller bearings.

Key features:

- Enhanced grease life ensures longevity, high-temperature lubrication of ball and roller bearings, particularly in sealed-for-life applications;
- Advanced polyurea thickener increases durability versus conventional polyurea greases when subjected to mechanical shear forces;
- Low-noise properties are beneficial for lubrication of ball bearings in many noise-sensitive applications.

Mobilith SHC™ Series

The Mobilith SHC Series greases are superior performance products designed for a wide variety of applications at extremes of temperature.

Key features:

- High and low temperature performance enables protection at high temperatures and low torque;
- Protection against wear, rust and corrosion reduces downtime and maintenance costs;
- Structural stability in the presence of water retains excellent grease performance in hostile aqueous environments.

Mobilgrease XHP™ 220 Series

Mobilgrease XHP 220 greases are designed for a wide range of applications including the industrial, automotive, construction and marine sectors. Their performance features make them an ideal choice for operating conditions including high temperature, water contamination, shock loading and extended relubrication operations.

Key features:

- Resistance to water washout and spray-off helps assure proper lubrication and protection even in the most severe water exposure conditions;
- Rust and corrosion resistance offers protection of lubricated parts even in hostile aqueous environments;
- Broad multi-purpose application provides potential for inventory rationalization and reduced inventory costs.

When the process of relubrication is accomplished using the right lubricant, the benefits are in the interest of time, maintenance cost, productivity and profitability.

Relubrication is paramount for ensuring effective performance, protection and long life of rolling element bearings. When the process of relubrication is accomplished using the right lubricant, the benefits are in the interest of time, maintenance cost, productivity and profitability.

Ace Micromatic® Group

ACE® DESIGNERS

High Productive Lathes

SLIDING HEAD AUTOMATS

SHA 20

Application Examples

Medical Screw

Pump Piston

Auto Part

info@acedesigners.co.in
www.acedesigners.com

THINK Turning™ Ace Designers

LEVERAGING IoT IN BROWNFIELDS

Digital transformation has become imperative in order to sustain and succeed in the current era of industrial IoT. However, despite its immense benefits, there exists a plethora of challenges that Brownfield facilities face in embracing it. B&R Automation claims to have a solution that can fix the situation.

B&R's Orange Box enables machine operators to collect and analyze data from previously isolated machines and lines and get them fit for the smart factory.

Source: B&R Industrial Automation Pvt Ltd

POOJA PATIL
Corporate Communication
B&R Industrial Automation Pvt Ltd
pooja.patil@br-automation.com

Today, Industry 4.0 has transcended from being just a trend to a necessity. This industrial revolution is mainly characterized by the increasing digitalization and interconnection of machines, people, plants and facilities. It is not only limited to manufacturing and production, but it also focuses on the entire business model. It has opened up many opportunities in terms of efficiency, scalability, timesaving, productivity, and profitability. With the latest available technologies and connected manufacturing systems, the collection and evaluation of technical and operational data looks easy for the Greenfield projects.

However, the reality is different. In India, many operating factories are decade old and to shut these running facilities to develop advanced manufacturing facilities is a complicated and costly affair. Knowing this fact, enterprises have started retrofitting legacy equipment to support new industrial IoT solutions. Even though the industry estimates immense potential through smart manufacturing, the Brownfield facilities face various challenges such as interoperability between machines, data security and privacy.

Source: B&R Industrial Automation Pvt Ltd

The smartphone-inspired design and functionality of the user interface make it intuitive to use without requiring any specialist knowledge.

Challenges in retrofitting Brownfields

The modern manufacturing facilities with smart and advanced technologies are already reaping benefits of smart manufacturing processes. On the other hand, adoption of Industry 4.0 is conceptually difficult in Brownfield plants owing to legacy systems. In our country, many factories have decade-old infrastructure, and upgradation of existing equipment, machines, devices, and sensors incur high costs, acting as a major barrier for technology adoptions. One of the challenges the Brownfield factories face is collecting data and moving it to upper layers and IT. Even today, many manufacturers and industrial operators collect data manually and enter it into a spreadsheet. This approach is prone to human error and there is a possibility of data manipulation. Also, manual data collection does not give real-time information and hence can restrict or slow down the ability to find the root cause of downtime and take corrective actions. This results in unsatisfactory performance, drastically lowering RoI. To overcome these hurdles, Indian manufacturing needs a continued push towards enhanced automation without modifying the existing set-up. Although this may sound abstract, its impact is tangible and can fundamentally change business models in organizations.

Opportunities in smart manufacturing

The new era of 'smart manufacturing' is helping manufacturers to improve productivity, quality, and achieve mass customization without sacrificing quality, cost and speed. This is facilitating enterprises to innovate products and services while reducing time to market and rapidly increasing RoI. Industrial IoT looks at enabling standalone devices, machines, plants to communicate with each other and work together as a whole. It can generate and process an enormous volume of data. By systematically analyzing and networking this data, manufacturers can then improve production efficiency and productivity. Real-time data of machine health and availability can be used to create proactive maintenance schedules, which decreases downtime and substantially increases the availability of the machine. This leads to numerous advantages for enterprises in terms of boosting revenue, reducing operational costs and im-proving overall equipment effectiveness (OEE).

Digitalization has opened up the possibilities of remote monitoring and diagnostics of the machine. Connecting machinery to the Internet in a secure manner enables machine builders to remotely monitor the condition and performance of their machinery from anywhere in the world. This solution makes it easy to quickly respond to unforeseen problems and enhance after-sales service by reducing downtime and avoiding costly commute. Industrial IoT has the potential to revolutionize the way things are manufactured. It enables manufacturers to effectively meet growing consumer demands. The revolution in adaptive manufacturing is extending the economy of mass production down to batches of one efficiently with the higher margins on personalized products.

In our country, many factories have decade-old infrastructure, and upgradation of existing equipment, machines, devices, and sensors incur high costs, acting as a major barrier for technology adoptions.

Orange Box from B&R for Brownfields

A number of enterprises are now investing huge capex to establish new connected facilities in order to stay secure in the growing competitive market. Setting up Greenfield facilities from scratch not only includes a large startup cost, but also involves a significant amount of time to build the business and acquire approvals from governing authorities. Whereas, with a minimum capital investment and small modification, Brownfield facilities too can leverage smart manufacturing benefits within no time. Orange Box from B&R was developed with this in mind to provide Greenfield installation benefits to Brownfield installation in a cost-effective method.

Orange Box enables users to access energy and process data from previously isolated machines and lines, making them Industrial IoT-ready with a minimal effort. It can substantially reduce downtime and boost the availability of existing machines and lines, making operations more productive and profitable. Orange Box consists of a controller and preconfigured software blocks. The controller is able to collect operating data from any machine via its I/O channels or a fieldbus connection. With this data, the software modules generate and display OEE ratings and other KPIs, and share the information with higher-level IT systems using open source OPC UA communication. Installing Orange Box requires no changes to the existing hardware or software in the factories. Equipment owners can achieve a substantial boost in productivity with a remarkably small investment in time and cost. It is as simple and intuitive to operate as a smartphone. Orange Box is also equipped with advanced energy function, which can evaluate energy data collected from the machine. Energy consumption is measured directly on the machine and viewed on an industrial HMI screen. The software is also able to break down the energy consumption by the device and display it in a clear graphical overview. At a glance, operators can get an overview of the power consumption of any machine or the entire factory.

Source: B&R Industrial Automation Pvt Ltd

The Orange Box data acquisition and analysis system from B&R allows users to easily link data points via a visual editor. This gives them quick access to a structured overview of the causes of unplanned stoppages.

International Machine Tools & Industrial Trade Fair

18th Edition

inter 2019

INTEC 2019

(An Event of CODISSIA Intec Technology Centre)

Organised by

CODISSIA
Intec Technology Centre

CONCURRENT EVENTS

Toolex 2019

INDUSTRIAL AUTOMATION EXPO 2019

6th to 10th JUNE 2019

CODISSIA Trade Fair Complex

Coimbatore, INDIA

Exhibitors Profile

- Industrial Electrical & Electronics
- General Engineering
- Machinery for Process Industry
- Metallurgical Plant & Equipments
- Textile Machinery & Equipments
- Fabrication Machinery & Equipments
- IT Consulting & Service Providers
- Machine Tools & Accessories
- Hydraulics & Pneumatics
- Material Handling Equipments & Machinery
- Foundry Equipments
- Pumps & Fittings
- Precision Tools, Cutting Tools, Dies & Moulds
- Instrumentations Automation
- Factory Cleaning & Pollution Control Equipments
- Industrial Consumables

Platinum Supporter: ELGi Always Better.

Diamond Supporter: JANATICS Pneumatic

Silver Supporter: GISHNU GEARS Transforming Innovation

Conference Partner: TexasVentures www.texasventures.us

E-Magazine Partner: INDUSTRY 4.0 www.industry4o.com

STALL BOOKINGS OPEN

Mobile : 99655 15182 / 75025 22000 / 75029 22000 / 85020 22000

E-mail : intec@codissia.com Web : www.intec.codissia.com

Source: UCAM Pvt Ltd

TOWARDS **PRECISION** AND **PERFECTION**

The gear industry of the country is constantly in search of a solution to combat the present-day hurdles in producing ideal gears. Nimble Machines, a division of UCAM, offers CNC gear hobbing machines that promise to fit the bill.

RAJESH GAWHALE
Head —
Nimble Machines
rajesh.gawhale@
nimblemachines.co.in

Today, the Indian gear industry is facing the challenge to produce high-quality, noiseless gears in a required volume at a highly competitive price. This is making gear manufacturers seek machine tools and technologies to meet these needs. The current market trend is to move away from the conventional or refurbished gear hobbing machines towards CNC gear hobbing machines which are highly reliable and productive.

Direct Drive technology

Direct Drive technology in hob spindle and work tables has given a cutting edge to CNC gear hobbing machines. Direct drive spindles offer higher torque with higher speed up to 4,500 rpm as against 1,000 rpm in conventional belt driven spindles. With higher cutting speed, cycle times have drastically reduced with Carbide Hobs. Spindles with built-in motors are more reliable and maintenance-friendly due to less number of mechanical parts.

CNC gear hobbing machines are now available with torque motor driven rotary tables as against worm gear tables. The advantages of direct drive tables are their higher response, reliability, speed and torque.

Higher hobbing accuracy to avoid finishing gear cutting operations

Direct drive technology in CNC hobbing machines allows higher spindle revolution for higher cutting speeds which, together with quality hobs, is able to improve the accuracy in the gear hobbing up to DIN class 7. With the improved accuracy on hobbing machines, one can avoid finish gear cutting operations like gear grinding and shaping.

Managing hob life and improving process efficiency

Using common hob for roughing and finishing operations is a

NIMBLE | MACHINES
Smarter. Swifter. Superior.

High Speed High Performance Gear Hobber

NOAH SERIES

High precision work holding, Hob clamping and automation to maximize productivity

Typical Components

Nimble Machine state of the art factory situated on the Doddaballapur - Dobbaspet Highway, Somapura Industrial Area, Bangalore.

sales@nimblemachines.co.in www.nimblemachines.co.in Phone: +918040744777

Source: UCAM Pvt Ltd

Direct Drive technology renders a cutting edge to CNC gear hobbing machines

compromise for the hob life, as cutting conditions are different for both operations. For example: roughing operations produce higher volume of chip thickness and need higher gaps in the gashes. Whereas for finishing operations higher cutting speeds can be used as chip thickness is less.

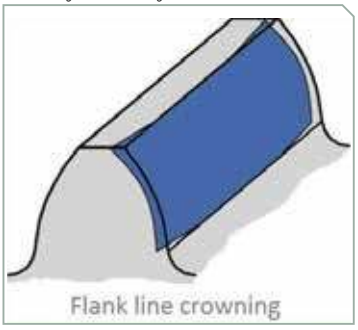
With programmable Hob Shift feature of CNC gear hobbing machine, separate hobs for rough and finish gear cutting are mounted on the same arbor. This improves the tool life as tool wear and tear in rough gear cutting does not affect accuracy in finish gear cutting. Same can be further improved by using multi-start hobs for roughing and single-start hobs for finishing.

Also, multiple hobs can be mounted on the common arbor to cut multiple gears on a component in single set-up, thereby reducing cycle time and increasing productivity.

Automatic loading and unloading of components

With reduced cutting time due to improved cutting tools and parameters, it is vital to reduce non-cutting time to achieve optimum cost per piece. To meet this requirement, CNC gear hobbing machines are now available with options for auto loading / unloading of components. Ring loader is the most preferred option due to its short cycle time for loading and unloading. Ring loaders are available with two or four stations. Four-station ring loaders are used to cut down the change-over time further, as well as for additional operation like deburring. These machines are also supplied with conveyor mechanisms for transporting parts for easy loading unloading.

Crowning to reduce gear noise



Source: UCAM Pvt Ltd

Source: UCAM Pvt Ltd

Managing hob life and improving process efficiency

Crowning to reduce gear noise

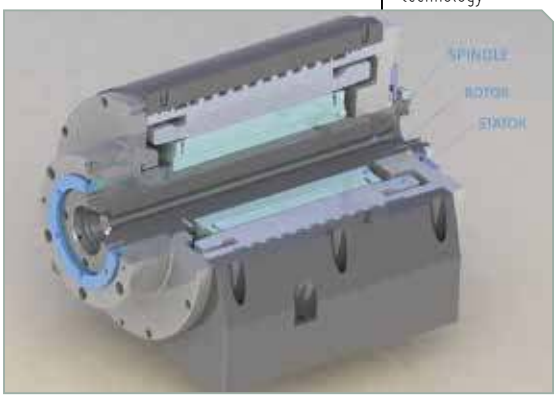
Gear noise due to improper gear profile has been a problem in gear train mechanism. Crowning of the teeth has helped in reducing the gear noise. Crowning involves the variation of thickness of the gear tooth and ensures the contact in the center. It also helps in minimizing misalignment issues caused due to inaccurate machining of shafts, housing etc. Crowning can also reduce the lead problems in the gears which cause gear to wear unevenly.

Noah series of CNC gear hobbing machines

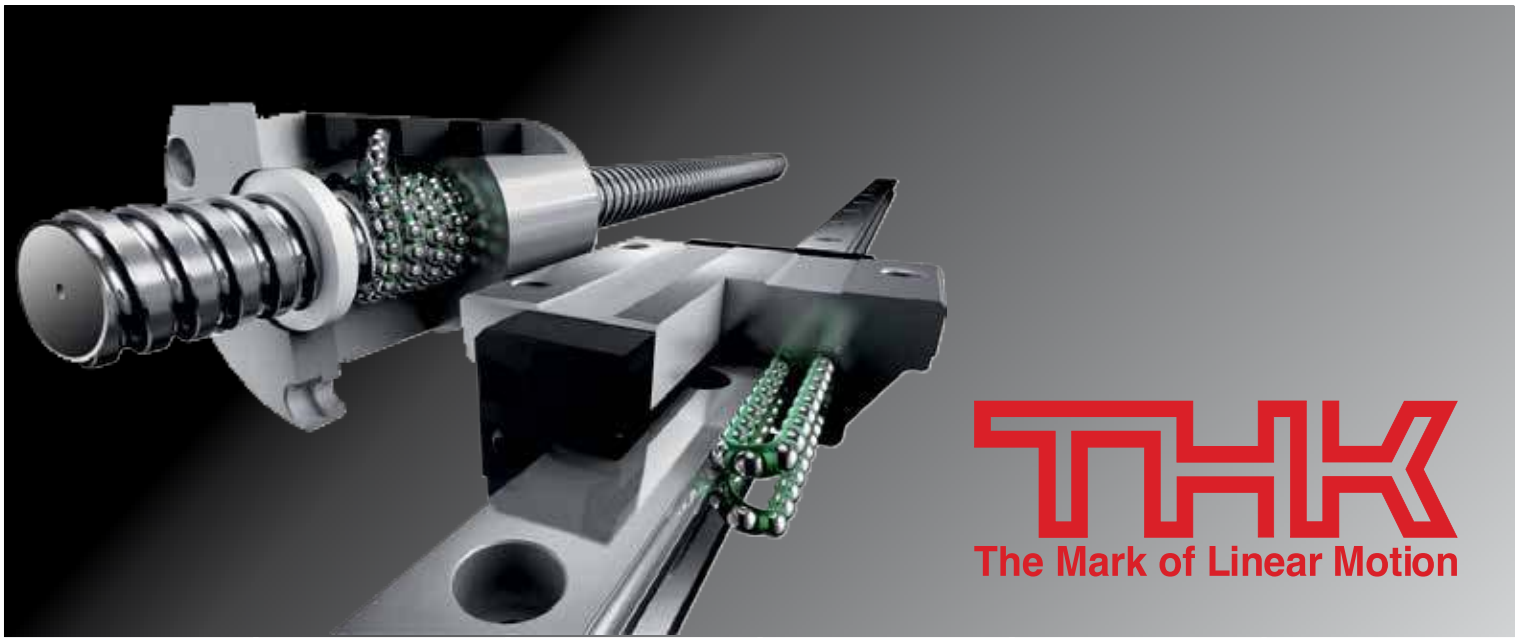
Noah series produced by Nimble Machines, a division of UCAM Pvt Ltd, are high-speed, high-performance, 6-axes gear hobbing machines. These machines come with vast features like Direct Drive technology, crowning gear software, and automation for loading and unloading. These are capable of cutting splines, sprockets, helical gears, and spur gears up to 12 modules and accuracy class up to DIN 6-7.

Noah series of machines are built with the latest technologies to produce the best quality gears for Indian users, thereby eliminating the dependency on foreign suppliers for high-end gear hobbing machines.

Direct Drive technology



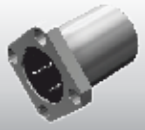
Source: UCAM Pvt Ltd

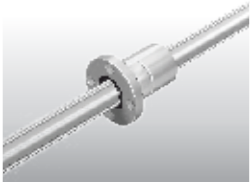



LM Guide


Ballscrew


Cross Roller Ring


LM Bush


LM Spline


Grease

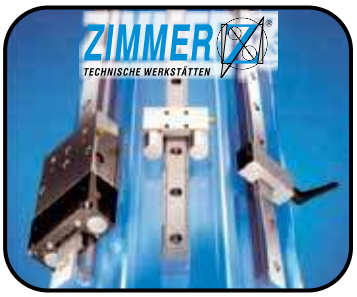

Cam - Roller Follower


Rod End - Link Ball


Cross Roller Guide


Ballscrew & Belt Linear Actuators

OUR OTHER PRODUCTS



LM Guide Clamp

Curvic Coupling

Gear, Rack & Pinion

Ball Transfer Unit

Mist Cleaner

Large Diameter Ballscrew

Precision Planetary Gearbox

Locknut + Locking Element

APEX® PRECISION

Amcats Pvt. Ltd.
Apex Precision Mechatronix Pvt. Ltd.

303 - 308, Krishna Bhuvan Annexe, 22-B, Govandi Station Road, Deonar, Mumbai - 400088
Tel: +91 22 6146 4444 Email: sales@apexprecision.co.in URL: www.apexprecision.co.in

MUMBAI BANGALORE CHENNAI HYDERABAD AHMEDABAD

The 'Smart Product for Waste Management and Reuse Project' Model designed by Pimpri Chinchwad College of Engineering students

Source: Dassault Systèmes

WORKING HAND IN HAND

The changing dynamics of the manufacturing world require students to be equipped with new skills to be future ready. To this end, Dassault Systèmes is being highly instrumental by collaborating with educators and students across various institutions and disciplines to bring about flexible, tailored learning solutions that can shape tomorrow's professionals.

PM RAVIKUMAR
Sales Director
SOLIDWORKS India
Dassault Systèmes
PM.RaviKumar@3ds.com

KISHOR SARVADE
Education
SOLIDWORKS India
Dassault Systèmes
Kishor.Sarvade@3ds.com

In today's economy, the academic community must reinvent itself to prepare engineers for the future. As per the industry reports, 85 percent of the jobs suited for the year 2030 do not exist today, making it hard to know which specific skills will be needed in the days to come. Thus, it has become imperative to focus on learning new skills with new methods of learning. The ability to do this is incredibly useful in this era of transformation. Traditional schools and training programs are still necessary, but students are

ISGEC PRESSES

MECHANICAL • HYDRAULIC

STANDARD MECHANICAL PRESSES

INTERNATIONAL QUALITY

SHORT DELIVERY

ATTRACTIVE PRICES

Mechanical Presses
200 - 630T

C Frame Presses
40 - 400T

Ring Frame Presses
110 - 400T

JAPANESE MNC CUSTOMERS

GIA · SANKEI · MARUTI SUZUKI · MUSASHI · Hone · EXEDY · TOYOTA · Bellsonica · HONDA · UNIPRES · Panasonic · YAMAHA · y-tec · HITACHI Inspire the Next · HONDA · YUTAKA · Ogihara · BELTECHNO · ADVICS For Safety Evolution · TOYOTETSU · Mitsuba

Mechanical, Hydraulic and Servo Presses Custom Engineered for a Range of Applications

Transfer • Servo • High Speed Progressive Die • Link / Eccentric Drive • Blanking with High Reverse Tonnage Capability
Die Spotting • Tryout • Hot Forming • Chassis • High Speed Hydraulic • Special Applications

4000+ Presses across 25 Countries

ISGEC HEAVY ENGINEERING LTD.

Contact: Yogesh Saxena / Rahul Gupta Tel.: +91-98965 49519, 89301 11509 E-mail: presses@isgec.com

increasingly turning towards online courses, peer-to-peer programs, and boot camps to acquire new talents. Reports also suggest that 49 percent of 18-24 year olds globally are already engaged in some form of learning to develop new ways of working with digital skills.

In this age of technologically integrated businesses, it is essential to focus on a set of strengths which comprises creative thinking, logic, emotional intelligence, technological literacy as well as objective judgment. The Skill India Mission by the Government of India is a step towards bridging the skill gap in the country and has proven to be instrumental in equipping students with the best of the industry opportunities to enhance their skills.

Working for a change in education

It has a long-standing tradition of collaborative innovation with educators across the globe. India is one of the fastest growing markets for the company and its focus is not just in serving existing customers, but also acquiring new ones and preparing the workforce of the future. In India, including both academic and commercial sectors, the company's CAGR over a period of three years is 21 percent. Today, more than 1,000 institutes are using SOLIDWORKS to teach engineering subjects like solid modeling computer-aided design (CAD) and computer-aided engineering (CAE). Most of these institutes are using its campus-wide license which allows them to access SOLIDWORKS Licenses anywhere in the campus and even on students' laptops. This helps in cultivating innovation as students can work on their projects and design ideas anywhere anytime using SOLIDWORKS.

Source: Magic Wand Media Inc

"SOLIDWORKS is quite an effective and user-friendly software that has helped our students develop the concept of 'Smart Product from Solid Waste Management'. All the required verticals of the software were used to develop the model for their product. As a faculty member, I recommend providing real-life problem statements to all engineering students and allowing them to work on these themes for competitions. Adequate time should be provided to students to develop 3D models of their products. Additionally, selected projects must be funded for prototype development and guidance be provided to students for setting up their own startups. This will help them create innovative products with the aid of the software."

Dr SS Lakade
Dean — R&D, Pimpri Chinchwad College of Engineering

Starting them young

An equally important goal is to support student competitions that create product advocates from the top students of the world. To foster innovation, the company also organizes an annual students' competition 'Aakruti' which is aimed at encouraging students to showcase their design skills, creativity, and innate talents.

Aakruti fosters innovation

Aakruti is well aligned with Dassault Systèmes' vision to promote the advancement of excellence in all aspects of engineering, engineering technology, and design while fostering innovative student projects and professors' educa-tional practices. This year, Aakruti focused on transforming existing products with future technologies by creating smarter products for especially abled citizens, rural ecosystems, and waste management. The team from Pimpri Chinchwad College of Engineering, Nigadi, Pune, emerged as the winner after competing with over 850 teams from 196 colleges across 21 states in India in Aakruti 2017. Their project is extremely relevant, and when commercialized, can provide a new dimension to municipal bodies across the country. Their 'Smart Product for Waste Management and Reuse Project' deals with the collection and segregation of municipal solid waste, its treatment at a local level and the generation of tangible and resalable products that have a good market demand.

The waste management plan designed on SOLIDWORKS provides a treatment of dry waste and generates electricity, slag, hot water as well as distilled water. The treatment of wet wastes generates biogas and manure that provide great impetus to the agro-based economy.

Reports suggest that 49 percent of 18-24 year olds globally are engaged in some form of learning to develop new ways of working with digital skills.

Newly Launched

FIBRO INDIA

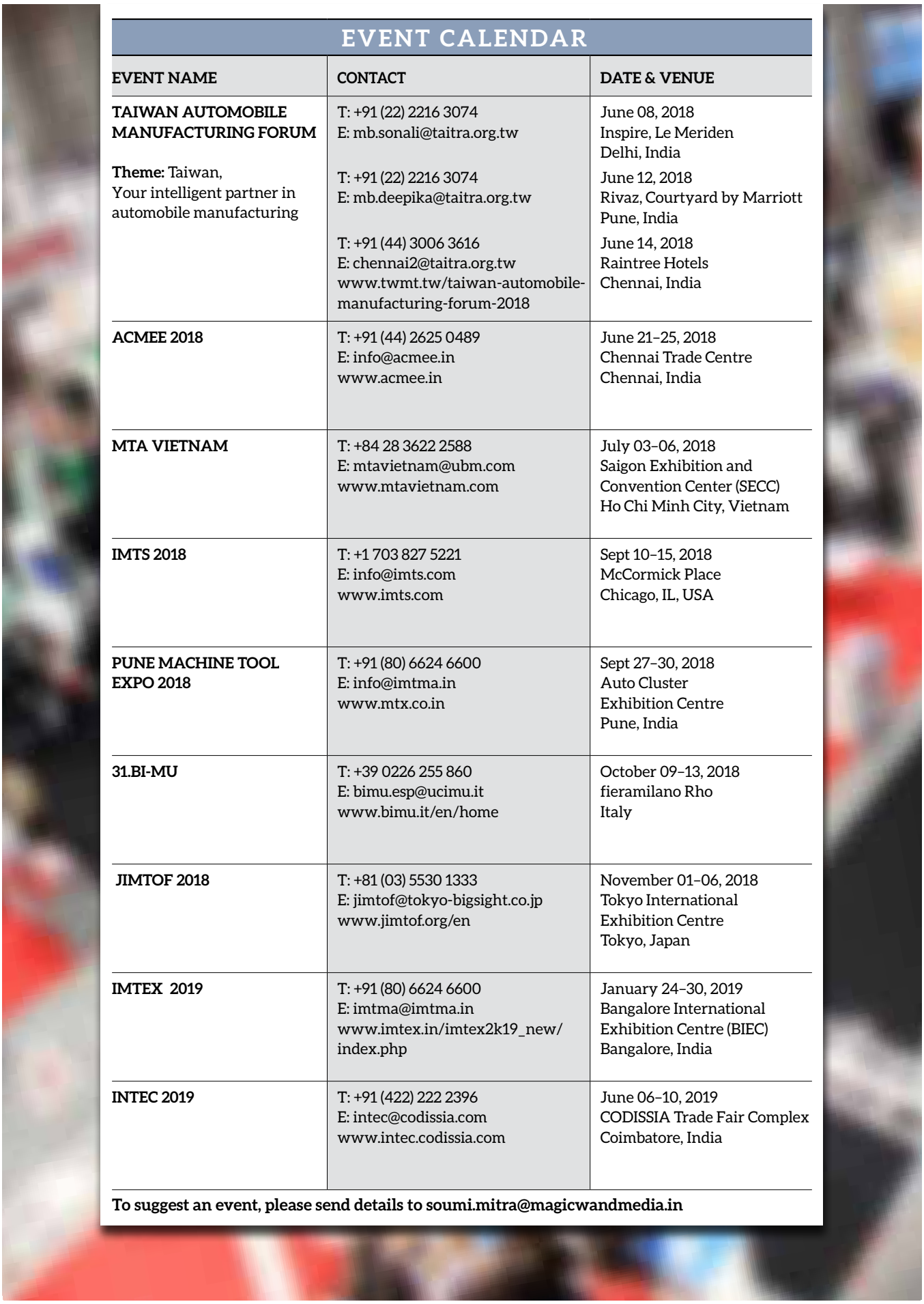
Making In India

Designed in Pursuit of Perfection

Ball Guide Pillar Set

- **Now Experience German Precision with Indigenous Cost Benefits.**
- **FIBRO Brass ball cage ensures long term durability & better alignment over any other ball cage.**

FIBRO INDIA PRECISION PRODUCTS PRIVATE LIMITED
Head Office & Works: Plot no: A-55, M.I.D.C, Phase II, Chakan, Pune - 410 501
D +91 2135 670 900 **E** info@fibro-india.com **W** www.fibro.com



EVENT CALENDAR

EVENT NAME	CONTACT	DATE & VENUE
TAIWAN AUTOMOBILE MANUFACTURING FORUM **Theme:** Taiwan, Your intelligent partner in automobile manufacturing	T: +91 (22) 2216 3074 E: mb.sonali@taitra.org.tw T: +91 (22) 2216 3074 E: mb.deepika@taitra.org.tw T: +91 (44) 3006 3616 E: chennai2@taitra.org.tw www.twmt.tw/taiwan-automobile-manufacturing-forum-2018	June 08, 2018 Inspire, Le Meriden Delhi, India June 12, 2018 Rivaz, Courtyard by Marriott Pune, India June 14, 2018 Raintree Hotels Chennai, India
ACMEE 2018	T: +91 (44) 2625 0489 E: info@acmee.in www.acmee.in	June 21–25, 2018 Chennai Trade Centre Chennai, India
MTA VIETNAM	T: +84 28 3622 2588 E: mtavietnam@ubm.com www.mtavietnam.com	July 03–06, 2018 Saigon Exhibition and Convention Center (SECC) Ho Chi Minh City, Vietnam
IMTS 2018	T: +1 703 827 5221 E: info@imts.com www.imts.com	Sept 10–15, 2018 McCormick Place Chicago, IL, USA
PUNE MACHINE TOOL EXPO 2018	T: +91 (80) 6624 6600 E: info@imtma.in www.mtx.co.in	Sept 27–30, 2018 Auto Cluster Exhibition Centre Pune, India
31.BI-MU	T: +39 0226 255 860 E: bimu.esp@ucimu.it www.bimu.it/en/home	October 09–13, 2018 fieramilano Rho Italy
JIMTOF 2018	T: +81 (03) 5530 1333 E: jimtof@tokyo-bigsight.co.jp www.jimtof.org/en	November 01–06, 2018 Tokyo International Exhibition Centre Tokyo, Japan
IMTEX 2019	T: +91 (80) 6624 6600 E: imtma@imtma.in www.imtex.in/imtex2k19_new/index.php	January 24–30, 2019 Bangalore International Exhibition Centre (BIEC) Bangalore, India
INTEC 2019	T: +91 (422) 222 2396 E: intec@codissia.com www.intec.codissia.com	June 06–10, 2019 CODISSIA Trade Fair Complex Coimbatore, India

To suggest an event, please send details to soumi.mitra@magicwandmedia.in

PUNE

MACHINE TOOL EXPO™ 2018

27 - 30 September 2018

Auto Cluster Exhibition Centre, Pune

The region's biggest machine tool expo

Delivered by the organizer of IMTEX®

Organiser

Indian Machine Tool Manufacturers' Association

ufi Approved International Event

www.mtx.co.in

PAVING THE WAY FOR SMARTIFICATION

Team MMI had the privilege of being invited by Taiwan Machine Tool and Accessory Builders' Association (TMBA) to attend the Taiwan International Machine Tool Show (TMTS) Pre-Show Press Conference in Taichung. With a few factory visits as an add-on, the experience turned out be a highly enriching one.

Source: Magic Wand Media

Jui-Hsiung Yen, Chairman, TMBA & Tongtai Machine & Tool Co., Ltd (fifth from left) along with industry legends during the TMTS 2018 Pre-show press conference in Taichung.

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

Backed by TMBA and the Taichung City Government, the coveted biennial show of Taiwan – TMTS 2018 will be held at Taichung International Exhibition Center and Greater Taichung International Expo Center from Nov 07-11. Supported by the Ministry of Economic Affairs, Bureau of Foreign Trade and Taiwan External Trade Development Council (TAITRA), the show will house around 750 exhibitors, occupying 4,300 booths in a sprawling 91,000 sq mt area. Keeping in sync with global smart manufacturing trends, the show is themed as 'Manufacture Linking • Activate the Future'.

Against this backdrop, Jui-Hsiung Yen, Chairman, TMBA & Chairman, Tongtai Machine & Tool Co., Ltd, shared that the exhibition campaigns for the smartification of machine tools to enhance the competitiveness of end-users and tap the capabilities of Taiwan's smart manufacturing to provide buyers with complete solutions.

Comprehensive displays

Globally, industries are moving toward smart manufacturing and applications to align with the trends of Industry 4.0 such as big data analytics, IoT and automated peripheral equipment to increase production efficiency and product quality, and reduce operational costs.

TMTS 2018 is being organized to help equip machine tool builders with the requisites to meet these latest manufacturing requirements of customers. The expo will be showcasing diverse capabilities of machine tool manufacturers. It will house metal cutting and metal forming machines, machine tool accessories, fluid power components, control and drive systems and auxiliary equipment, cutting tools, tool-holding and workholding devices, measurement instruments, and machines with smart functions (such as temperature rise compensation, collision avoidance, and process optimization), and automated production cells and production lines applied for 'Integrated machine tools and automation facility (such as robotic arm)'.

Manufacturing bandwidth

According to Carl Huang, President, TMBA, Taiwan is the seventh largest machine tool producer in the world occupying a global market share of 5-6 percent. The country's machine tool sales are export-oriented with a share of 79 percent, making it the fifth largest exporter of machine tools in the world.

Edifying plant visits

Team MMI had the opportunity to visit the following Taiwanese machine tool companies and witness their innovative ways to meet tough challenges of competing globally.

Ching Hung Machinery & Electric Industrial Co., Ltd (CHMER)

CHMER has a majority market share of EDM in Taiwan, second in China and fifth in the world respectively. Team MMI also got to meet its customer Macro Moulds

Source: Magic Wand Media

Lynn Yen, Business Planning Office, APEC, giving a virtual tour of the company's capabilities.

Source: Magic Wand Media

Brad Wang, Marketing Director, CHMER, explaining the features of its EDM machines.

Source: Magic Wand Media

Jui-Hsiung Yen, Chairman Tongtai Machine & Tool Co., Ltd (third from left), apprising team MMI on the latest global manufacturing trends.

Around 70 percent of Taiwan's machine tool companies are in and around Taichung, so it makes it even more imperative to hold TMTS 2018 in the city's High-Speed Rail Zone. The exhibition facilitates SMEs to present their machining capabilities to a wider audience. Speaking on the Indian market, Yen said that it holds a huge potential for Taiwanese machine tool builders. He further added, "We would like to invest in the training and education of engineers so that they can become more capable of handling the demands of the market and find solutions to the problems faced by the industry. Tongtai's focus will remain on application and know-how."

& Plastics Pvt Ltd from India. In TMTS 2018, the company will showcase its intelligent linear motor-driven wire-cut EDM. The company has 32 patents in innovative solutions for aerospace, energy and large mould industries.

Asia Pacific Elite Corp (APEC)

APEC is a subsidiary of Tongtai Group and specializes in producing 5-axis large-scale, high-speed machining centers for different industry sectors such as aerospace, automotive and die & mould industries. It is the only Taiwanese machine tool builder to have entered the supply chain of Boeing and Airbus for wing spar, beam, and stringer manufacturing via product named MC18/200-Dual (5-axis extra-scale, high-speed, dual-spindle machining center).

She Hong Industrial Co., Ltd (Hartford)

Hartford specializes in producing machining centers in its fully-equipped plants. It has also launched its controllers Hartrol plus and Smartcenter APPs to make smart machines. Its Robocell automation helps factories to upgrade from traditional to automation lines.

Falcon Machine Tools Co., Ltd (Chevalier)

The company's intelligent grinding machines are sought after in different parts of the world including India. Its strong R&D team works closely with the production and marketing teams to ensure optimum efficiency in the plant, thereby serving its customers deftly.

Qaser Machine Tools, Inc

The company invests 3-5 percent of its annual turnover into R&D each year, and its technical personnel make for 20 percent of its total workforce. The manufacturer of VMCs and HMCs ensures that its machines are well equipped with wireless network, database establishment, and production optimization and are in sync with Industry 4.0.

Yinsh Precision Industrial Co., Ltd

A specialized manufacturer of precision parts and components for the national defence, diagnostics and aerospace industries, Yinsh produces locknuts for bearings for machine tools. In India, it serves its customers through local distributors.

Yeong Chin Machinery Industries Co., Ltd (YCM)

Established in 1954, YCM has several patents and complete production lines to provide a wide range of VMCs, HMCs and CNC turning centers. The company has a dedicated R&D team that comes up with innovative solutions to keep pace with Industry 4.0 and Smart Factory trends.

Biggest ever

TMTS 2018 is believed to be a colossal show that would break its own past records in terms of exhibitors and visitors. TMTS 2016 played host to exhibitors from 14 countries—Germany, Switzerland, Italy, Sweden, the Netherlands, France, the United States, Canada, Japan, South Korea, China (including Hong Kong), Malaysia, Singapore, and Australia. This year, as per Elisa Li, Vice President, TMBA, around 85,000 buyers from domestic and international markets are estimated to visit the fair and source unique manufacturing solutions from the exhibitors from different parts of the world. The best way for exhibitors to closely understand buyers' needs and expand their business opportunities is through one-on-one meetings. TMBA acknowledges this fact and has, thus, organized procurement conferences, concurrent to the exhibition, where international buyers and exhibitors can closely meet. With preparations in full swing for the show, TMBA, through MMI, extends its invitation to one and all to join TMTS 2018 in lighting up the city of Smart Machinery – Taichung!

There are 1,801 machine tool and accessory builders in Taiwan investing US$85 million in R&D and US$3 million on technology purchase.

iMTduo 2018: TOWARDS MAKING THE FACTORY FUTURE-PROOF

Organized by Taiwan Association of Machinery Industry (TAMI) and Taiwan External Trade Development Council (TAITRA), the 2018 edition of Taipei Intelligent Machinery & Manufacturing show (iMTduo) was held from May 09-12, 2018 at Nangang Exhibition Centre. Woven around the theme of 'Driving the New Wave of Manufacturing', the fair housed a comprehensive range of intelligent manufacturing solutions.

Source: Magic Wand Media

President of Taiwan, Tsai Ing-wen (sixth from left) along with industry legends gracing the inaugural of iMTduo 2018.

Taking pride in Taiwan being the fourth largest country in the world to export Smart Manufacturing Machinery, the country's President Tsai Ing-Wen, at the opening ceremony of iMTduo, shared that presently its market is 1.1 trillion NTD, and 700 billion NTD comes from the exports alone. The industry grew by a whopping 25 percent last year, and is expected to reach 2 trillion NTD soon.

To achieve this goal, TAITRA and TAMI are promoting Smart Manufacturing across the world. There are dedicated zones for Smart Manufacturing that focus on auto and aerospace sectors and nine major projects have been undertaken to digitize Taiwan's manufacturing sector. In alignment, James C F Huang, Chairman, TAITRA, apprised that the country's manufacturing industry has accounted for more than 30 percent of its GDP in recent years and continues to grow. Acknowledging the important role of Smart Manufacturing in boosting Taiwan's economic development, the government has included Smart Machinery in its Industrial Innovation and R&D Program to accelerate transformation and upgrading of Taiwan's machinery and manufacturing industry. Enlightening on rechristening 'Taipei Machinery & Manufacturing show' (MTduo) to 'Taipei Intelligent Machinery & Manufacturing show (iMTduo 2018), Alex BS Ko, Chairman, TAMI, elaborated that this show is an apt procurement platform for facilitating interaction between machinery companies and intelligent manufacturing solutions.

Wide array of displays

Spread across a net area of 9,000 sq mt, iMTduo witnessed partic-

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

Source: Magic Wand Media

Source: Magic Wand Media

Source: Magic Wand Media

Source: Magic Wand Media

(L-R): Thomas Huang, Executive Director, Exhibition Department, TAITRA and David Chuang, Chairman of Machine Tool Committee, TAMI, addressing the media at the TIMTOS 2019 Pre-show Press Conference.

TIMTOS 2019 to mark its 27th anniversary

The Taipei International Machine Tool Show 2019 (TIMTOS) will jointly play host at Taipei World Trade Center and Nangang Exhibition Center to approximately 1,450 exhibitors from Germany, Switzerland, Italy, Americas, Turkey, Singapore, Japan, South Korea and India. Following suit, TIMTOS 2019 will be themed around its previous theme of 'Industry 4.0 & Smart Manufacturing'. There will be a dedicated exhibition area for new AI and Startups to facilitate achieving 'human-machine collaboration' and making automated production lines more efficient and resilient. Visitors will be able to see a plethora of solutions that combine machine tools, sensors, industrial robots, cloud data analysis, and remote monitoring technologies - aimed to move from a single machine towards the concept of Industry 4.0. This will surely be an inspirational and insightful event.

ipation of around 230 exhibitors showcasing the latest products and technologies in Automation, Robotics, 3D Printing, Additive Manufacturing, Industry 4.0, and Smart Production lines. Representing the entire industrial supply chain, iMTduo displayed critical smart manufacturing components that will meet the future demands for low-volume, high-variety and customized production. To name a few, Far East Machinery Co., Ltd (FEMCO) exhibited the first 'Smart Manufacturing Cloud' initiative in Taiwan, which is an automated aluminum wheel production line integrated with Cloud Computing, Big Data and IoT. Ching Hung Machinery & Electric Industrial Co., Ltd (CHMER) displayed its RV853L – an intelligent linear motor-driven wire cut EDM that combines new intelligent processing systems such as process information monitoring, machine networking and real-time production management. Maxmill Machinery Co., Ltd showcased its IoT integrated 5-face machining center and HQM-1260 Vertical Machining Center. Sun Firm Machinery Ind. Co., Ltd (SFM) displayed its machines that are equipped with remote monitoring systems to check the life of machine parts, spindle servo axis and tool as well as report potential problems in advance and solve them, reducing cost and preventing waste of operational time. Manufacturers of PC-based CNC controllers, Syntec Technology Co., Ltd showcased a variety of its controllers that help the machine tool industry meet automation requirements. Luren Precision Co., Ltd showcased its LWT-2080 CNC Worm and thread grinding machine which can monitor the real-time conditions of vibration, preload stress, lubrication and temperature of the screw.

Source: Magic Wand Media

In 2017, the total export value of Taiwan's machine tools reached US$3.35 billion, up 15.5 percent over the same period of the previous year. An estimated 8-10 percent growth is expected in 2018.

The Industrial Technology Research Institute (ITRI) is Taiwan's largest leading high-tech applied research institution that is committed to utilize its R&D results to drive industrial development and create economic value. Since its inception, it has incubated more than 300 startups and spinoffs, accelerating the growth of Taiwan's industry. It showcased impressive displays of intelligent production systems and cobots at its booth.

Concurrent Sessions

For the first time, in parallel to the show, a Summit was organized which consisted of eminent speakers from Americas, Japan and Taiwan. Dr Sanjay Joshi, Professor of Industrial and Manufacturing Engineering, PennState and Center for Innovative Materials Processing through Direct Digital Deposition; John Watts, AP Marketing Director, Rockwell Automation; Tomoaki Kubo, Secretary General of Robot Revolution Initiative (RRI); Tamai Takeshi, Executive Vice President, Mitsubishi Electric Co., Ltd and Tim Lai, Director of Smart Machinery Promotion Office, respectively spoke on contemporary topics such as Additive Manufacturing, Smart Factory, Industrial Robots and Internet of Things (IoT).

Conclusion

The show stood out to be a one-stop smart manufacturing service platform with IoT being integrated into all systems. The 2020 edition of iMTduo will certainly bear the fruits of all the efforts taken by the Taiwan government through TAMI and TAITRA.

GEARING UP FOR THE FUTURE

Having achieved a phenomenal success in the earlier editions of ACMEE, Ambattur Industrial Estate Manufacturers Association (AIEMA) is organizing the show's 13th edition at Chennai Trade Centre, Chennai, from June 21-25 2018.

A glimpse of ACMEE 2016 that garnered tremendous response from the industry.

Source: AIEMA

With the view to showcase the latest products and technology from the global machine tools industry and bring together the manufacturing fraternity under one roof for a meaningful exchange, ACMEE's 13th edition is being held at Chennai Trade Centre, Chennai.

The biennial event will play host to 480 companies hailing from 28 countries in a sprawling 10,050 sq mt space of net exhibition area spread over five halls.

"The current ACMEE will be the biggest in the series in terms of the number of exhibitors, visitors and business generation. The number of exhibitors is the highest in the history of the show. Gauging the visitor registration and the response so far, we estimate more than 50,000 visitors, which again is unprecedented," informs K Ayyappan, Chairman, ACMEE 2018.

As a new initiative, the organizers have invited buyers from neighbouring countries and depending on the buyers' needs and exhibitors' interests, different types of supports are extended to overseas buyers.

With a view to provide a platform for presenting their projects

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

Source: ACMEE

"The list of the exhibitors comprise the who's who of the industry and they are presenting their latest technology to help improve efficiency, productivity, and volume turnover.**"**

K Ayyappan
Chairman
ACMEE 2018

Source: Hurco India

"We have had success in the past at ACMEE, and now the number of Hurco machines in Chennai is the highest as compared to other cities.**"**

Sanjib Chakraborty
Managing Director
Hurco India

Source: Beckhoff Automation Pvt Ltd

"ACMEE 2018 is prominent platform for exhibitors bringing world-class technologies to enhance productivity in the manufacture of quality products in India.**"**

Ajey Phatak
Head Marketing
Beckhoff Automation Pvt Ltd

to the industry experts and gathering their feedback, free booth space has also been allocated to students of select engineering academic institutions.

Grand opening

The inaugural session of the event is scheduled to be held at 10.00 AM on June 21, 2018 at the venue of the event. Shri Suresh Prabhu, Hon'ble Commerce and Industry Minister, Government of India, has agreed to be the Chief Guest and inaugurate ACMEE 2018. Thiru O Paneerselvam, Hon'ble Deputy Chief Minister of Tamil Nadu, has also agreed to grace the function which is expected to be attended by many other dignitaries.

Spotlight on latest technologies

The event will focus on the latest in machine tools technology from different parts of the world with emphasis on Energy Saving Solutions, Improving Productivity and Industrial Automation.

In line with the focus, the show will be featuring an exclusive Industrial Robotics and Automation Pavilion. "We have kept in view the latest industrial trends – particularly Industry 4.0 – that offer excellent solutions for cost reduction, perfection, time and energy saving in the present competitive environment," shares Ayyappan.

"Industrial Internet of things (IIoT) or Industry 4.0 is the order of the day. It is revolutionizing manufacturing by enabling acquisition of and accessibility to far greater amounts of data, at far greater speeds, far more efficiently. Many exhibitors will be presenting their innovations in this regard as well," he adds.

ACMEE 2018 will significantly help the local entrepreneurs in witnessing the latest in machine tools and production technology from all over the world and will facilitate in their efforts to move towards Smart Manufacturing and adopt Smarter Solutions. This will contribute directly to the 'Make in India' initiative.

Exhibitor offerings

"The list of the exhibitors comprise the who's who of the industry and they are all presenting their latest in terms of technology, designed to improve efficiency, productivity, and volume turnover," states Ayyappan.

The biennial event will play host to 480 companies hailing from 28 countries in a sprawling 10,050 sq mt space of net exhibition area spread over five halls.

The products that are to be displayed at the event include: CNC Machines, CNC & PLC Controls, Cutting Tools and Accessories, Special Purpose Machines, Pneumatics, Hydraulics, Industrial Robotics & Automation, Instrumentation, Machinery & Machine Tools, Welding, Material Handling Systems, Energy Saving Solutions, Sheet Metal Press, Laser Cutting, Cleaning Systems, Cold Forging Machines, Co-ordinate Measuring Machines, Control Devices, Power Tools, Testing & Measurement Equipment, Related IT & Consultancy Service.

Along with showcasing their products, exhibitors are also to offer live demonstrations and technical presentations on their offerings. Some exhibitors are to launch their new machine tools and services, tailored to the needs of the sub-continent at the show, all designed to improve the production process, energy saving, cost cutting and productivity. The show will also house Taiwan Country Pavilion.

Positive exhibitor sentiment

ACMEE has a fan following in its exhibitors. Most have been

Source: Zavenir Daubert India

"The expo is an ideal platform to gain an insight into the recent market trends and emerging opportunities in metalworking in Chennai and the areas around it."

Balwant Bains
GM – Product Management & Marketing
Zavenir Daubert India

Source: LMW

"Our main target audience at ACMEE 2018 are tier 1 and 2 auto component manufacturers. We will be promoting our range of VMCs and increasing our reach to customers."

Indraneel Bhattacharya
Vice President, Sales & Marketing
Machine Tools Division
LMW

Source: Jyoti CNC Automation Pvt Ltd

"The show has come a long way in terms of participation and technology level of the exhibits. ACMEE 2018 would be a technological delight for all connected to the field of metalworking."

Sureshkumar V
Assistant General Manager – Sales
Jyoti CNC Automation Pvt Ltd

regularly taking part in the show and have been benefited by its reach. Jyoti CNC Automation is among its loyal patrons. "Each edition of ACMEE has given us a unique experience in terms of learning and growing. The show provides us with a platform to connect better with our clients and delegates from diverse sectors. This opens up new growth opportunities for us, reinforcing our market positioning," notes Sureshkumar V, Assistant General Manager – Sales, Jyoti CNC Automation.

In alignment, Ajey Phatak, Head Marketing, Beckhoff Automation, shares, "We expect visitors from companies into Machine Design, Machine manufacturing, Control system technology experts, O&M Engineers, End User manufacturers, and Engineering experts from the Southern region to visit the show. IoT being a preferred topic of interest for all manufacturing industries, we expect many users to visit with their plans for IoT projects."

Echoing similar sentiments, Sanjib Chakraborty, Managing Director, Hurco India, says "ACMEE 2018 is very significant for us and we have experienced success in the past after participating in the event, which is one of the most popular events in India and especially in Chennai."

ACMEE 2018 will focus on the latest in machine tools technology with emphasis on Energy Saving Solutions, Improving Productivity and Industrial Automation.

Keen to explore current trends in machining technology and the latest ways of manufacturing engineering products at ACMEE, Dipesh S Jaju, Partner (Technical Head), Pawan International, shares, "The overwhelming response of the show's last edition brings us back to ACMEE 2018."

Source: Pawan International

"This is our second time at ACMEE. The overwhelming response and the footfall we received the last time at the show is enough motivation to bring us back."

Dipesh S Jaju
Partner (Technical Head)
Pawan International

After a highly successful stint at ACMEE 2016, Zavenir Daubert India is positive about its success at ACMEE 2018. According to Balwant Bains, GM – Product Management & Marketing, the expo is an ideal platform to gain an insight into the recent market trends and emerging opportunities in metalworking in Chennai and the areas around it.

ACMEE is a no-miss affair for Lakshmi Machine Works (LMW) that has been promoting its products and generating sizeable enquires and orders at ACMEE every year. "It is one of the biggest machine tools exhibitions and its venue – Chennai – is a hub for automobile and engineering products manufacturing, which is an advantage," states Indraneel Bhattacharya, Vice President, Sales & Marketing, Machine Tools Division, LMW.

If the exhibitors are this upbeat about ACMEE 2018, visitors can rest assure to find themselves equally delighted at the technology spread laid out for them from world over.

Block your dates!

National Productivity Summit 2018

"Showcasing Competitiveness in Manufacturing"

24 - 25 August 2018 | ITC Grand Chola | Chennai

To champion the cause of productivity and enhancing competitiveness in the Indian manufacturing industry, IMTMA is organizing the 12th edition of National Productivity Summit on 24-25 August 2018 at Chennai. The event showcases best practices in manufacturing through inspiring keynotes, Live case study presentations, Plant visits and so on.

Key Take Aways

- Listen to keynote presentations from industry leaders
- Cross learning from best manufacturing practices
- Insightful Plant visits to renowned manufacturing companies
- Ideal platform to interact and network with several manufacturing professionals
- Learn innovative approaches to address productivity challenges

Who Should Participate

CEOs, Senior Executives, Practicing engineers, Industry consultants, R&D Specialists from manufacturing industries Viz. Automotive, Auto components, Consumer durables, Machine tool, Tool rooms, Aerospace, Defence and Railway units, PSUs, General Engg. and other discrete manufacturing industries.

For details, contact : Mr. Abhishek ; abhishek@imtma.in or call 080-6624 6829

ORGANISED BY

Indian Machine Tool Manufacturers' Association
www.imtma.in

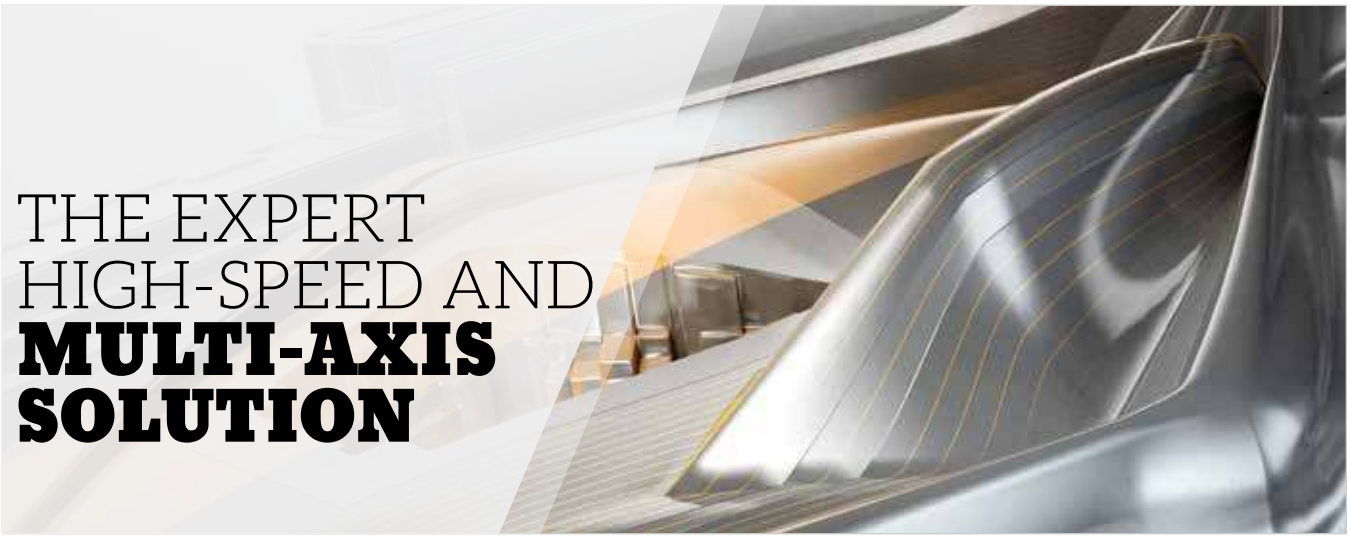
AWARDS SPONSOR

AceMicromatic® Group

MEDIA PARTNER

MODERN MANUFACTURING INDIA

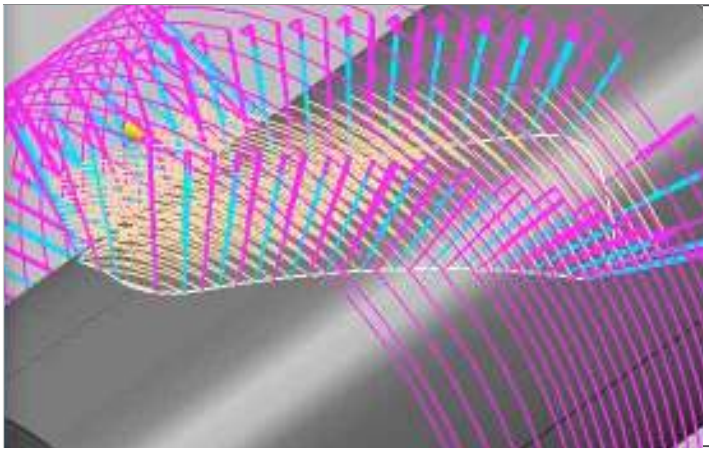
AUTODESK.



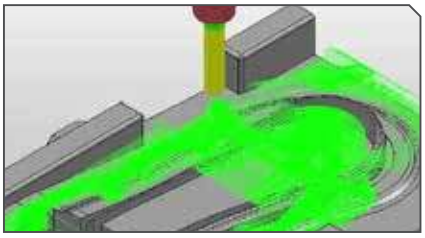
THE EXPERT HIGH-SPEED AND **MULTI-AXIS SOLUTION**

PowerMill 2019 continues to offer expert 3- and 5-axis programming tools to help manufacture complex parts with new additive and subtractive technology.

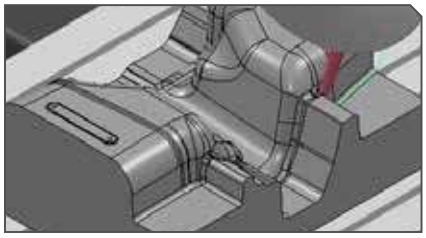
Introducing enhanced 3-axis high-efficiency roughing and new 5-axis collision avoidance tools. Use machining setups to synchronize the link between toolpaths and NC programs. Send manufacturing data to Fusion Production for cloud-based collaboration. Access dedicated tools to drive high-rate additive manufacturing processes.
Visit www.powermill.com to find out more.



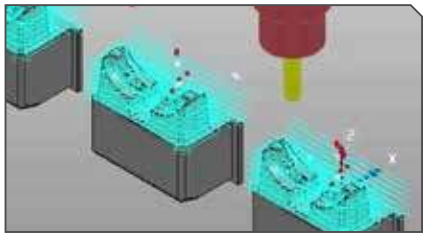
Additive manufacturing (subscribers only)
Access a suite of tools to help program, control, and simulate high-rate additive manufacturing. Create specialized toolpaths to drive wire-fed and powder-blown processes on a range of hardware platforms.
Use directed-energy deposition to build complete 2.5D and 3D components or add localized features or surface coatings to existing models for a cost-effective means of fabricating, enhancing or repairing parts.
Control key process parameters to help achieve high quality builds and combine with 5-axis subtractive toolpaths to produce accurate parts with hybrid manufacturing.



Vortex from stock
PowerMill 2019 includes a new option to create high-efficiency roughing toolpaths. Based on Adaptive Area Clearance technology offered in other Autodesk CAM products, this new option can generate more efficient toolpaths with fewer tool retractions, shorter cycle times and increased tool life.



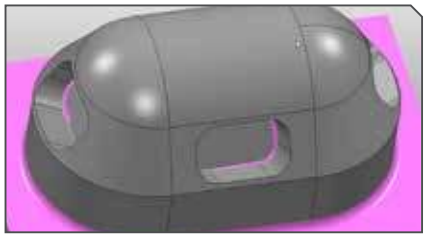
Automatic tool tilting
Use this new option to simplify 5-axis programming regardless of model shape or toolpath type. Define the required shank and holder clearance distance and let PowerMill do the rest. Collisions and near misses are identified and automatically avoided with smooth machine motion that helps avoid dwell marks or other imperfections.



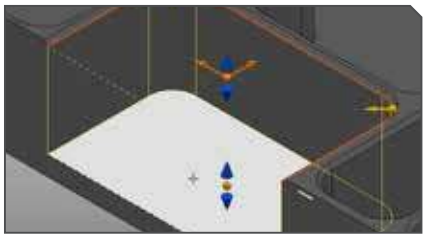
Machining setups
PowerMill's new setup entity helps synchronize the connection between toolpaths and NC programs. Add toolpaths to a setup and have confidence that changes made are automatically passed to the associated NC program. Use setups with fixture offsets to simplify the programming of parts using multiple operations or fixture locations.

ViewMill thickness shading
PowerMill's stock simulation tool – ViewMill – includes a new shading mode to help visualize and identify unmachined stock. Automatically determine the maximum thickness of material left on a part and use dynamic slider bars to see the distribution of stock across the model. Have increased confidence as parts are complete before being removed from the CNC machine.

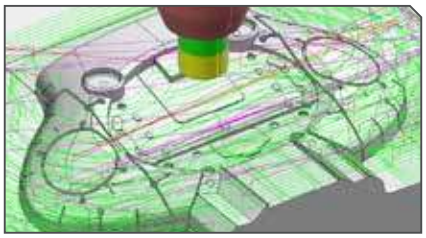
Upload to Fusion Production (license required)
Send key manufacturing data to Autodesk Fusion Production, a cloud-based collaboration tool. Use Fusion Production to schedule work, track jobs and monitor CNC machine utilization. Create work instructions, dispatch job sheets, monitor workstations and view performance reports using desktop and mobile devices. Identify underperforming processes and make decisions to improve overall equipment effectiveness.



Stock model enhancements
PowerMill 2019 offers a new "detect overhangs" option that creates more accurate stock models when programming parts containing undercuts or overhanging geometry. Combine with 3+2 roughing and rest-machining to identify and remove more material from parts. Minimize the likelihood of tools colliding with undetected stock during subsequent machining operations. Have confidence to run CNC machines "lights out".



2D machining improvements
Use the new "sides" feature type to help simplify the programming of open sided pockets, slots and bosses. Automatically identify open edges for more efficient entry and exit moves. Choose to create 2D features using surface geometry in addition to wireframe. Use dynamic drag handles to modify key dimensions, add fillets or chamfers where required.



Autodesk Drive (subscribers only)
Save PowerMill data to Autodesk Drive, a cloud storage solution that allows individuals and small teams to collaborate more effectively. Upload data, organize into folders and invite project stakeholders to view with desktop or cloud connected devices. Use 3D viewers to review models, tools, toolpaths and NC programs, without the need for a PowerMill license.

User experience improvements
Use enhanced second-level tool tips to learn more about PowerMill capabilities. Access commonly used commands and macros with keyboard accelerator shortcuts. Organize the contents of PowerMill projects using a new insertion marker and improved explorer flexibility. See the latest help and getting started documentation online at **http://help.autodesk.com/view/PWRM/2019/ENU/**

Make Great Products
Autodesk manufacturing software helps you make better quality products, faster. Machine, print, inspect, and fabricate parts efficiently.

- Complete modular manufacturing solutions – CAM, additive, composites
- Manufacturing expertise to automate, optimize and integrate your manufacturing processes, in addition to your software
- Cloud-connected so you can collaborate and manufacture anytime, anywhere.

Learn more at www.autodesk.com/MAKE.

"PowerMill allows me to machine my parts faster and better than any software I've ever used before."

Paul Miranda
Project Leader
Magna Advanced Technologies

Energy Management

EtherCAT Terminals for mains monitoring, process control and power monitoring

Beckhoff's four new EtherCAT I/O terminals cater to the demands of energy management in machine operation and in the energy industries.

Together with the proven EL37x3 power monitoring oversampling terminals, Beckhoff's four new EtherCAT Terminals provide a comprehensive product portfolio for a wide range of applications.

– As the new standard power measurement terminal, the EL3443 3-phase EtherCAT Terminal is universally suitable for all process control tasks. It offers numerous new functions such as mains monitoring functionality, precise determination of zero voltage crossing and harmonics analysis. In addition, it is also suitable for DC systems.

– The EL3453 3-phase EtherCAT Terminal for measuring voltages up to 690 V AC focuses on more demanding process control tasks. For this purpose, the terminal updates its process values with every half-wave, which corresponds to an interval of 10 min at 50 Hz. Four electrically isolated current measuring channels with freely adjustable measurement ranges for 100 mA, 1 A or 5 A, with a surge current capability of 60 A, are available.

– As an economy version, the new EL3423 3-phase power measurement terminal is intended for cost-sensitive energy management solutions, especially in IoT applications. The parameters that can be measured are energy, power and a mains quality factor. These are recorded with an update interval that is adjustable from 10 sec to 1 hr. As a special feature, the measured parameters are available as average, minimum and maximum values.

– The EL3483 3-phase mains monitoring terminal for voltage, frequency and phase enables optimum monitoring of the power supply to a machine, which is particularly advantageous for systems that are sensitive to voltage variations. The functions include threshold value monitoring of the internal measured values, and setting of warning and error bits in the process image.

With the optimally scalable EtherCAT Terminals for energy management, a wide range of tasks can be solved in the areas of power monitoring and process control as well as mains monitoring and maintenance.

Source: Beckhoff Automation Pvt Ltd

Beckhoff Automation Pvt Ltd
T: +91-20-4000 4800
E: info@beckhoff.co.in
www.beckhoff.co.in

JIMTOF2018

The 29th JAPAN INTERNATIONAL MACHINE TOOL FAIR

November 1 (Thu.) - November 6 (Tue.), 2018
Tokyo Big Sight (Tokyo International Exhibition Center)
Organizers : Japan Machine Tool Builders' Association
Tokyo Big Sight Inc.

ufi Approved International Event

IMTS TOKYO

Company Index

Advertiser Index

Asia's Leading Fixture Builder for over 45 years.

"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 and all over India. Forms and Gears owns state of the art design and manufacturing facilities in Guindy, Chennai, housing one of the largest and best equipped tool room facilities in the country.

45 years of Engineering Excellence

www.formsandgears.com

Forms & Gears

MF 11, Industrial Estate,
Guindy, Chennai 600 032.
Email : info@formsandgears.com
Phone : +91 98400 32111

RNI NO. KARENG/2017/72993

TaeguTec
Member IMC Group

XNHU 09-MM

CHASE 2 HEPTA

XNMU 06-M

>>> NEW MILLING SOLUTION FOR GENERAL MACHINING OF CAST IRON AND STEEL

- 45° entry angle face mill available with 14 corner economical double sided inserts
- Ideal solution for rough machining on cast iron and steel
- Efficient and smooth machining credit to its positive cutting edge geometry that lowers cutting loads during rough machining

TaeguTec India Pvt. Ltd.
Plot Nos.119 & 120, Bommasandra Industrial Area, Phase 4, Bengaluru 560 099, India
☎ +91-80-4901 3000 🖷 +91-80-2783-9123 ✉ sales@taegutec-india.com 🏠 www.taegutec-india.com

TaeguTec
Member IMC Group