



Global Trends in Manufacturing Technologies

# INTERNATIONAL SEMINAR ON **MANUFACTURING TECHNOLOGIES**

18 JANUARY 2023, BIEC, BANGALORE

Organised by



Indian Machine Tool  
Manufacturers' Association





The manufacturing landscape is undergoing rapid and unprecedented transformations in the wake of Digitalization, Automation, Industry 4.0 and Integration of diverse technologies and competences, to scale new standards of adaptability and performance. Industries can no longer afford to be complacent and ignore this onslaught of intelligent, data based working, with integration of all manufacturing and supporting processes.

With a view to highlight the evolving trends in manufacturing technologies, Indian Machine Tool Manufacturers' Association (IMTMA) is organising the 'International Seminar on Manufacturing Technologies' on 18 January 2023, in conjunction with IMTEX 2023 exhibition, in Bangalore.

## Facilitators

Experts from Austria, Germany, Israel, Italy, Japan, UK, USA as well as from India will facilitate sessions at this International seminar. Spread over 3 concurrent sessions and 6 technology tracks, this seminar will cover key technology areas and their application related to manufacturing.





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## Glimpses of presentations

### ◆ **Accelerating the adoption of industrial digital technologies in manufacturing,**

*Manufacturing Technology Centre, UK*

Illustrations of “Catapult” Program undertaken in UK to accelerate Digitalization cutting across sectors such as Defence, Aerospace, Railways, Construction and Manufacturing through deployment of Automation, Robotics, Simulations & Virtual Commissioning, application of Augmented / Virtual Reality and use of Artificial Intelligence – Machine Learning in practical situations.

### ◆ **Special features for 5 axis machining,** *Makino, Japan*

Benefits of keeping the tool tilted with respect to milled surface in surface finish. Special control algorithms to smoothen the free form surface for Die-Mold and Blisk. Illustrations of use of Control algorithm to break long winding chips while machining.

### ◆ **Integration of technology with machining: Booster for efficiency,** *DMG Mori, Germany*

Integration of Turning, Milling, Grinding and Gear Machining with 5 micron class precision level into a single machining centre. Illustration of its use for multiple machining cycles for typical jobs and the benefits expected from this strategy.

### ◆ **Titanium and Inconel machining for large size jobs,** *WFL Miltorn Technologies, Austria*

Typical applications in Aerospace, Oil exploration and Heavy Engineering, special requirements and difficulties in machining these jobs. Features in machine and controls to meet the requirements and enable higher level of productivity and performance.

### ◆ **Intelligent workholding solutions,** *Schunk, Germany*

Work holding devices such as Tool Holders, Grippers, Clamping Blocks and Quick Change Pallet System with embedded sensors integrated with Control Electronics and Software, for enabling the unmanned machining process, productivity and quick setup change.

## Glimpses of presentations

### ◆ **Making special roughing and variable geometry cutter better,**

*Indian Institute of Technology, Kanpur*

Advantages of using a variable pitch and / or variable helix cutter for reducing chatter. Advantages of using serrated cutters. Optimization of cutter geometry and experimental prediction and validation of improved productivity through aggressive machining parameters and stable cutting in line with the theoretical model.

### ◆ **Smart manufacturing: Role of In-process measurement and monitoring during Grinding process,** *Marposs, Italy*

Advantages of In-Process Gauging for metrology, for grinding wheel balancing and use of acoustic emission for first contact and crash detection. Use of noise signatures for mass produced jobs for abnormality detection and process condition monitoring to detect anomaly at its first appearance.

### ◆ **Laser tool profile measurement at CNC machine,** *Blum Novotest, Germany*

Advantages of Laser Cutter Profile measurement at CNC machine spindle rather than using tool pre-setters for free form machining with Ball Nose and Bull Nose Cutters for comprehensive Tool Wear Compensation of the tool shape. Besides, it can compensate for spindle and tool runout while machining.

### ◆ **Industrialized Additive Manufacturing – power of eco-system partnerships,** *Siemens, Germany*

Illustration of how electronic controls, devices and software could provide perfect eco-system for various technologies of Additive Manufacturing along with Robotic automation and CNC controls that complements, drives and integrates to make these technologies viable and practical for large scale Industrial use.

### ◆ **Digital twin for productivity improvement in machine tools,** *Fanuc, India*

Digitization features in CNC to enable forecasting and optimizing machined surface quality by using curved profile smoothing functions. Deployment of Artificial Intelligence - Machine Learning powered algorithms to optimize dynamic response and dynamic precision of CNC Controls for best Quality and Productivity. Digital Twin technology is also used to detect and avoid collisions while executing complex cutter paths with use of attachments.



## Glimpses of presentations

### ◆ **Next-generation Data Modelling, Association for Manufacturing Technology, USA**

What, Why and How of Model Based Enterprise, built up through Model Based Definitions, using Model Based Standards, rather than paper based standards. These technologies are enabled through newer version of MT Connect 2.X, to ensure harmonization and extensive use of Digital Twin based prediction. Case studies will be presented to prove the concept under diverse demanding scenarios.

### ◆ **Applications of Metaverse in manufacturing, Bosch, India**

Practically deployed Industrial Use-Cases for Augmented Reality, Mixed Reality and Virtual Reality to inspire confidence and show the way forward for what exciting possibilities could be unleashed through these nascent exotic technologies, while upholding the business considerations.

### ◆ **Seamless Data acquisition, management and analytics in machining with and without customized hardware, m2nxt, India**

Case studies from different sectors for Data Acquisition and Analytics from manufacturing equipment, with and without use of customized hardware, and without dependence on data coming through CNC Controls and PLCs.







## Glimpses of presentations

### ◆ Solutions in virtual 3D printing environment, *Hexagon, India*

Simulations to predict quality and cycle time for Additive Manufacturing technologies, to optimize process parameters, and for ease of costing. The simulations also cover post processing such as Hot Isostatic Pressing and Shrinkage of Sintering process.

### ◆ Operating economics of Metal Additive manufacturing, *Amace Solutions, India*

Metal Additive Manufacturing market trend in India, the economics and evolution machine specifications and operating parameters making the technology more competitive and usable for regular industrial usage.

### ◆ Rapid adoption of Additive Manufacturing in the Space sector, *Manufacturing Technology Centre, UK*

Case studies and drivers for use of Additive Manufacturing in Aerospace sector in a big way, comparative analysis of how the drivers could evolve similarly for manufacturing in Automotive and engineering sector and how the technology could unfold in near future.



## Tentative Programme Schedule

0800 - 1000	Registration		
1000 - 1100	<b>Inaugural &amp; Keynote Session :</b> <b>Keynote Address:</b> "Accelerating the adoption of industrial digital technologies in manufacturing", Dr. Nandini Chakraborty, <i>Associate Director, Manufacturing Technology Centre, UK</i>		
1100 - 1120	Networking Tea/Coffee		
<b>Parallel Concurrent Sessions</b>			
	<b>Machining</b>	<b>Emerging Trends</b>	<b>Additive Manufacturing</b>
1120 - 1155	<b>Titanium and Inconel machining for large size jobs,</b> <i>WFL Milturn Technologies, Austria</i>	<b>Digitization and New Age Approach to 'On Demand' Manufacturing,</b> <i>Zetwerk, India</i>	<b>Solutions in virtual 3D printing environment,</b> <i>Hexagon, India</i>
1155 - 1200	Change Over		
1200 - 1235	<b>Special features for 5 axis machining,</b> <i>Makino, Japan</i>	<b>Applications of Metaverse in manufacturing,</b> <i>Bosch, India</i>	<b>Operating economics for metal Additive Manufacturing,</b> <i>Amace Solutions, India</i>
1235 - 1240	Change Over		
1240 - 1315	<b>Integration of technology with machining: Booster for efficiency,</b> <i>DMG Mori, Germany</i>	<b>Performance analysis and evaluation of sustainability of machining system,</b> <i>Indian Institute of Technology Madras</i>	<b>Rapid adoption of Additive Manufacturing in the Space sector,</b> <i>Manufacturing Technology Centre, UK</i>
1315 - 1415	Lunch		
	<b>Workholding and Tooling</b>	<b>Enabling Technologies</b>	<b>Industry 4.0</b>
1415 - 1450	<b>Intelligent workholding solutions,</b> <i>Schunk, Germany</i>	<b>Laser tool profile measurement at CNC machine,</b> <i>Blum Novotest, Germany</i>	<b>Next-generation Data Modelling,</b> <i>Association for Manufacturing Technology, USA</i>
1450 - 1455	Change Over		
1455 - 1530	<b>Making special roughing and variable geometry cutters better,</b> <i>Indian Institute of Technology Kanpur</i>	<b>Industrialized Additive Manufacturing – power of eco-system partnerships,</b> <i>Siemens, Germany</i>	<b>Seamless Data acquisition, management and analytics in machining with and without customized hardware,</b> <i>m2nxt, India</i>
1530 - 1535	Change Over		
1535 - 1610	<b>Enhancing tooling productivity by better design,</b> <i>ISCAR, Israel</i>	<b>Smart manufacturing - Role of In-process measurement and monitoring during Grinding process,</b> <i>Marposs, Italy</i>	<b>Digital twin for productivity improvement in machine tools,</b> <i>Fanuc, India</i>
1610 onwards	Tea/Coffee		

## Participation invited from

Automotive, Auto components, Consumer durables, Die & Mould, Machine tool, Tool rooms, Aerospace, Defence and Railway units, PSUs, Pumps & Valves, General Engg. and other manufacturing industries. Decision makers including CEOs, senior executives, practicing engineers, industry experts, R&D specialists and academia will immensely benefit from this seminar.

### REGISTRATION FEE

CATEGORY	REGISTRATION FEE PER DELEGATE	GROUP CONCESSION
IMTMA Members, Micro and Small Enterprises, Research & Educational Institutions, Individuals	<b>Rs. 3000/-*</b>	A concession of Rs. 500 per delegate will be offered to companies nominating 3 or more delegates
All other Companies	<b>Rs. 3500/-*</b>	

Note:

1. Add 18% GST\*
2. Delegate fee is Non-refundable. However, change of nominations within the same company acceptable
3. Micro & Small Enterprises companies must produce valid UDYAM Registration Certificate
4. Delegate fee includes lunch, seminar documentation and shuttle bus service from Bangalore city centre to BIEC (Seminar venue)
5. IMTMA Members may avail their membership redemption points for participating in the summit

Registration for participation must be made online only.

To register online, log on to [www.imtma.in/ismt](http://www.imtma.in/ismt)

For any queries / clarifications during 'Online Registration' process, please contact Mr. Abhishek, tel : 080 - 6624 6829 ([abhishek@imtma.in](mailto:abhishek@imtma.in))



#### Visit IMTEX 2023

While the participants come to attend this International Seminar on 18 January 2023, it is a good opportunity to visit IMTEX 2023 exhibition scheduled at Bangalore International Exhibition Centre (BIEC) from 19-25 January 2023 and witness the latest technologies in manufacturing from reputed companies across the globe.

#### About IMTMA

Constituted in 1946, Indian Machine Tool Manufacturers' Association (IMTMA) is a single point of contact for the machine tool industry in India. The apex body of machine tool industry in the country, IMTMA has a membership of about 460 companies from both the public and private sectors, manufacturing a wide range of metal-cutting and metal-forming machines, accessories, cutting tools and other allied equipment. The association has over the years deeply committed itself to focus on issues of productivity, quality, technology, new product development, design, customer satisfaction, etc. for enhancing competitiveness of the industry in both domestic and overseas markets. IMTMA organises the prestigious IMTEX and Tooltech exhibition, where both Indian and overseas manufacturers showcase their metalworking machines, equipment and tools.



Indian Machine Tool Manufacturers' Association  
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