Manufacturing Technology Training
An IMTMA initiative

# Testing, Calibration and Accuracy Measurement of CNC Machine Tools
## Date : 17 to 18 February, 2022
## Time : 1340 Hrs to 1700 Hrs ( Online Mode )

## INTRODUCTION

CNC Machines are deployed in diverse range of manufacturing industries. Users need to test Machine tools at the time of purchase and also periodically during its use and operation. Evaluation needs to be done in accordance with relevant parts of National / International standards & procedures which can be broadly categorized into three areas, mainly Geometrical alignment test, Functional & Machine accuracy capabilities. Conventional testing methods of machine tools are limited essentially to static measurements of geometrical alignments, and few functional tests under 'no load' conditions to qualify the machine performance and also for machine acceptance.

However, the performance of a Machine tool is evaluated in terms of static and dynamic compliance to tolerances, surface finish of components and so on. These are essentially determined by static & dynamic accuracy of machine movements. A proper knowledge of, Static & Dynamic aspects, Calibration aspects like positioning & repeatability, cutting trials on standard work piece will helps users in assessing the capability of the machine. Keeping this in view, Indian Machine Tool Manufacturers' Association (IMTMA) is organizing an online training on **"Testing, calibration and Accuracy Measurement of CNC machine tools".**

## FOCUS AREAS

- Test code for machine tools and test parameters for machine tool qualification
- **National and International standards for determining Positional accuracy and Repeatability of machine tools**
- Functional tests:
  - Axes response for position and velocity
  - Spindle Vibrations
  - Machine Noise
- Accuracy aspects:
  - Positioning Accuracy and Repeatability of axes
  - Interpolation accuracy (ball bar)
  - Finish machining accuracy on IS/ISO test piece
- Static, Dynamic and Thermal aspects
- **Live Demo on**
  - **Laser Calibration**
  - **Ball bar testing**
  - **Spindle vibrations and balancing**
  - **Static rigidity**
- Sources of errors and their root cause identification
- **Discussion on specific issues faced in industries-Accuracy, Chatter, Testing and Calibration**

## KEY TAKE AWAYS

- Understand the various Testing Standards and methods
- Evaluation of Positional accuracy and Repeatability as per standards
- Understand the Spindle vibrations and Frequency analysis
- Understanding the Natural frequencies of machine structure
- Understanding the chatter occurrence and root cause analysis to reduce chatter
- Static, Dynamic and Thermal aspects of machine effecting accuracies
- Finish machining accuracies for machine acceptance
- Safety aspects of machines as per recent developments in standards

## FEE PER PARTICIPANT (PER LOGIN)

**Rs. 4500/-**
+18% GST
**IMTMA Members/ Micro Companies/ Individuals/ Educational Institutions / Students/ IMTMA Non Members/ Others**

**USD 180/-**
**Overseas Participants**

**Group Concession : 20% for 3 to 5 and 30% for 6 and more delegates being nominated from the same company**

## FACULTY

This programme will be conducted by **Mr. Balaramaiah, Director at Advanced Machine Tool Testing Facility (AMTTF)**

Mr. Balaramaiah has rich domain experience of more than 40 years in Testing, Inspection and Performance Evaluation of Machine Tools, Design and development of Special Products, supported by AMTTF testing engineers.

Advanced Machine Tool Testing Facility (AMTTF), established by IMTMA with Govt. of India support, providing Testing and Development support and services to Machine Tool industries and sub-systems. AMTTF is equipped with the state-of-the-art equipment and facilities to test machine tools, accessories to establish their performance against National (BIS) and International Standards (ISO). AMTTF has a team of well-trained Engineers, who are experienced to carry-out machine testing at customer works, and qualify the machine to meet National/International standards.


## For Registration Contact

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**REGISTRATION :** Prior registration with an online advance payment is must. Number of participants is limited and will be accepted on 'First Come First Serve' basis. A Certificate of participation will be issued to participants.