



**“Precision Components manufacturing:  
Need to go beyond Lean and Continuous  
Improvements?”**

**Do you need step change in cost, quality  
and productivity?”**

**A FLAGSHIP PROGRAM FOR THE  
HIGHER LEVEL PROFESSIONALS  
IN THE MANUFACTURING  
SECTOR IN INDIA.**

**OFFERED BY IMTMA AS PART  
OF A SERIES OF INITIATIVES TO  
TO MEET THE GROWING NEEDS  
OF TRAINED MANUFACTURING  
PROFESSIONALS**

# WORKSHOP



**Technology Centre**

Indian Machine Tool Manufacturers' Association  
Presents:

## **The system Approach to precision manufacturing - Grinding Processes**

22-25 May 2012,  
IMTMA Technology Centre, BIEC, Bangalore





## THE SYSTEM APPROACH

- The System Approach is a methodology for large scale improvement in total cost, quality and productivity.

- It is an approach parallel to and possibly the next wave for manufacturing innovation after Lean and Six Sigma.

## INDIAN MANUFACTURING SECTOR IS GROWING AND THUS MOVING FORWARD

- From low cost to high tech. manufacturing (where the need for better quality and consistency are increasing)
- Where the scales of manufacturing are growing (and cost and productivity pressures are higher)
- From simple manufacturing to “design and manufacturing”, where the higher end professionals are required to have a broader and in-depth knowledge about manufacturing processes – beyond lean and six sigma practices of today.

## IMTMAS' NEW INITIATIVE

- A flag ship program of IMTMA to meet the growing needs of trained manpower at the higher levels professionals in the manufacturing sector in India.
- It is offered by IMTMA as part of a series of initiatives to train the manufacturing professionals at all levels - low, mid-level and high levels.





## GRINDING IS CRITICAL

- Grinding is a critical and in most cases the final manufacturing process for all precision components manufacturing.
- Grinding is a surface generation process that determines the quality and performance of many critical parts, subsystems and systems.
- Grinding is a process widely used in many manufacturing industries:
  - > From Automotive to Aircraft manufacturing

- > From Cutting tools to Carbide manufacturing
- > From Bearings to Semi-conductor manufacturing, etc.
- Total cost, quality, productivity and performance of precision components are all very much impacted by grinding processes.

## COURSE CONTENT

- The participants will learn on the method to look at the manufacturing process “as a whole” as a system.
- They will learn how to apply the Science, Engineering and Management principles pertinent to the process together (and not as isolated pockets) to achieve large scale improvements in the process.
- They will learn about the “Microscopic interactions” (i.e) what really happens when the sparks are produced?
- The students will participate in hands-on, laboratory style experiments, where they will collect the data and analyse the data during the grinding process.
- There will be guest lectures from industry specialists on selected topics..



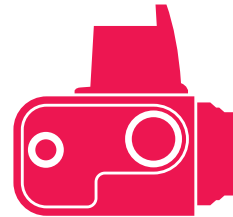


This workshop will be presented by Dr. K. (Subbu) Subramanian, a world renowned expert in Manufacturing Process Technology. He is the President of STIMS Institute, a Knowledge Management Co. Dr. Subramanian has developed an approach to go beyond lean and Six Sigma. This approach is outlined in his book titled, "The System Approach - A strategy to survive and succeed in the Global Economy". Dr. Subramanian is collaborating with IIT - Madras and IMTMA on Education initiatives in India.

Dr. Subramanian has over 34 years of Industry experience starting at Ford Motor Company and International Harvester Company, prior to joining Norton Company, which is

now part of Saint-Gobain. He has set up a worldwide network of Grinding Technology Centres - in USA, Germany, China and India. These technology centres promote Research, New Business Development, Innovation and Knowledge Integration in precision components manufacturing, through alliances with worldwide customers, machine tool builders, other suppliers, universities and research institutes.

Dr. Subramanian has obtained his B.S. Degree from Osmania University, India and D. Sc. degree from MIT, USA. He has published extensively and holds several patents. Dr. Subramanian is an elected Fellow of the SME and ASME. He is currently working in his second book to be published by ASME Press, titled, "Transformational Skills for 21st Century Technical Professionals".



**To know more about the workshop content and its importance to your organisation, click here to view an interview with Dr. (Subbu) Subramanian**

<http://www.youtube.com/watch?v=ngAAIndU1zQ&feature=youtu.be>





## PARTICIPATION

- All engineers and managers with over 5 years of experience in precision manufacturing sector.
- Anyone with responsibility to improve the total cost, quality and productivity of precision components manufacturing.
- Any one responsible for precision components design and development
- Any one responsible to develop and implement new manufacturing process solutions.

- Any one in R&D, Research Institutes or academia supporting any of the above developments in the manufacturing sector.

## TAKE AWAYS

- They will have an ability to look at the grinding process (and other manufacturing processes) with a broader perspective.
- They will not look at the process as a “black box” or something merely random/statistical. Instead they will start looking at the Science, Engineering and Management aspects as required and relevant to the situation.
- They will have a template and frame work for The System Approach, which they can apply immediately for their precision components manufacturing projects or assignments.
- They will be able to “Zoom in” to look at the technical details and also “Zoom out” to look at the big picture (in terms of engineering and economic issues) as required.
- They will be able to build bridges by connecting the knowledge already available from the shop floor, from the engineering departments, from the suppliers, from the machine tool builders and yes, even from their customers!



# PROGRAM SCHEDULE

## 22 May 2012

0800 - 0830	Registration
0830 - 0900	Test 1
0900 - 1030	Why should we grind?*
1030 - 1100	Break
1100 - 1230	The system approach for industrial processes*
1230 - 1330	Lunch
1330 - 1500	Inputs - Work materials and their response to Grinding Processes*
1500 - 1530	Break
1530 - 1630	Self Introduction by Participants
1630 - 1700	Advances in work materials and trends - Industry expert**
1700 - 1730	Advances in Grinding Machine Tools and Trends - Micromatic Grinding Technologies**
1730 - 1800	Break
1800 - 1930	Group Dinner

## 23 May 2012

0800 - 0930	Inputs - Operational parameters and their role in the Grinding system*
0930 - 1030	Instruction for Lab Exercise*
1030 - 1100	Break
1100 - 1230	Measurement & Analysis of Grinding Processes - Part 1*
1230 - 1330	Lunch
1330 - 1700	Laboratory Exercises - 1 & 2
1700 - 1830	Inputs - Abrasive Tools & other consumables*



# PROGRAM SCHEDULE

## 24 May 2012

0800 - 0930	Inputs - Machine Tools (Platform for Grinding Processes)*
0930 - 1030	Microscopic interactions*
1030 - 1100	Break
1100 - 1230	Technical outputs
1230 - 1330	Lunch
1330 - 1700	Laboratory Exercise 3 & 4
1700 - 1730	Advances in Abrasive Tools - Saint Gobain**
1730 - 1800	Cutting Fluids - Castrol**

## 25 May 2012

0800 - 0930	Measurement & Analysis - Part 2*
0930 - 1030	System outputs*
1030 - 1100	Break
1100 - 1130	Test 2
1130 - 1230	Class presentation by participants
1230 - 1330	Lunch
1330 - 1500	Application of the system approach for Grinding Process*
1500 - 1530	Participant Feedback
1530 - 1600	Certificates & Awards presentation
1600 - 1630	Open Discussion

Note: \*Dr. K. Subramanian

\*\* Faculty Invited

Types of Organisation	Fees per participant	Service Tax (12.36%)	Total Participation Fees
IMTMA Member & SSI Companies	₹ 35,000	₹ 4326	₹ 39,326
Non Member Companies (Large & Medium)	₹ 40,000	₹ 4944	₹ 44,944

Participation fee includes course material, working Lunch & Tea/Coffee. Companies interested in participation are requested to return the attached 'Reply form' duly filled along with Demand Draft/ at par cheque in favour of 'Indian Machine Tool Manufacturers' Association payable at Bangalore to the address mentioned in the reply form.

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# PARTNERS



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