



# INTRODUCTION TO ABRASIVE MACHINING AND FINISHING PROCESSES

## **PROF. MAMILLA RAVI SANKAR**

Department of Mechanical Engineering  
IIT Tirupati

**INTENDED AUDIENCE :** BE/B.Tech, ME/ M.Tech, Ph. D (Mechanical Engineering, Production Engineering).  
Faculty who teaches manufacturing.

**INDUSTRIES APPLICABLE TO :** Oil India Ltd., ONGC, TATA motors, ISRO, BARC, DRDL, NTPC,  
CMTI, CMERI, CGCRI, Grind Master, NRL

### **COURSE OUTLINE :**

This course will define the areas of application of traditional as well as non-traditional abrasive finishing processes in the manufacturing industry. The lectures will introduce the basic principles of material removal by use of abrasives particles and material removal mechanism of different abrasive process. The effects of various input parameters on the outputs as well as the use of cutting fluids in various finishing process will be discuss. A variety of numerical problems and MCQs, discussions will also be included.

### **ABOUT INSTRUCTOR :**

Prof. Mamilla Ravi Sankar is currently an Assistant Professor in the Department of Mechanical Engineering, IIT Guwahati. He did his B.Tech from Sri Venkateswara University, Tirupati, and M.Tech as well as PhD from IIT Kanpur. His research group is focus on Sustainable Manufacturing, Eco-friendly Cutting fluids, Coatings, Advanced Manufacturing, Tribology and Rheology. MRS Lab also involves in development of lab scale Innovations to Commercial Manufacturing Products. He has published over 30 research articles in internationally reputed journals, 2 Patents, 2 Edited Books and 6 Book chapters. He is recipient of prestigious awards such as Institution of Engineers India (IEI) Young Engineers Award-2015 in Production Engineering, Indian Society for Advancement in Materials and Process Engineering (ISAMPE)-2011 and finalist of Indian National Academy of Engineering (INAE) Young Engineer Award-2014. Apart from academic awards, he is also received Institute Blues (Outstanding Sports Personality) of IIT Kanpur for the year 2009.

### **COURSE PLAN :**

**Week 1:** Introduction conventional abrasive processes,Introduction to abrasive processes,Grinding Process

**Week 2:** Conventional abrasive finishing processes (CAFP): Honing & Wire Brushing,CAFP: Lapping, Buffing & Super finishing,Practical Conventional abrasive finishing processes

**Week 3:** Adv. abrasive machining processes (AAMP),AAMP

**Week 4:** Hybrid Adv. Abrasive Machining Processes,Advanced Finishing

**Week 5:** Adv. Finishing: Abrasive Flow Finishing

**Week 6:** Adv. Finishing: Magnetic Abrasive Finishing

**Week 7:** Adv. Finishing: Magnetic Rheological Finishing

**Week 8:** Hybrid abrasive finishing,Finishing of Advanced Materials