



# TRAINING SERVICES





*Over the past 135 years, we have been manufacturing innovative abrasive products and providing cutting-edge solutions for rough and precision grinding industries. This experience of over a century has shaped our offerings to be more holistic. Apart from the comprehensive line of abrasive products, we now provide Abrasive Services, crucial for machine maintenance and seamless production.*

## TRAINING SERVICES

In the fast-paced Indian manufacturing industry, staying ahead of the competition while being profitable requires focusing on several factors, such as reducing manufacturing costs and rejections and exploring ways to achieve a better cost per component without compromising on quality. As an important process in production of discrete components with high precision, grinding must be understood thoroughly in order to achieve better control on quality, productivity and costs.

Norton Abrasives, with their trained experts, offer a holistic training program that empowers you with knowledge of grinding concepts to drive productivity improvement and embrace new technology at your shop floor. The program will help you to understand factors that affect productivity and overall cost, through in-depth knowledge of grinding parameter optimization, product upgradation and cost reduction.

The curriculum is designed for engineering, plant & purchasing personnel as well as experienced lead operators with knowledge of abrasives in production grinding and quality.

## KEY TAKEAWAYS

1. Customized module based sessions & focus for customers based on needs
2. Get information & knowledge directly from industry experts
3. Get access to a number of case studies and examples that are relevant to industry and easy to correlate
4. Stay updated with the most recent advancements in grinding technology directly from Norton

# OFFERINGS

## MODULE#1\*

### Understanding of Grinding Wheel, Basics of Abrasives, Manufacturing Process & Grinding theory

Learn to classify a grinding process. Understand various types of abrasives & bonds and their properties. Get to know the constituents of a grinding wheel, selecting the right specification for your application & its effects on the grinding process. Get a brief overview of chip-level interactions, theories involved in grinding. Understand the manufacturing process to produce a bonded grinding wheel.

**\* DURATION  
1.5 TO 3 HOURS  
PER MODULE**

## MODULE#2\*

### Latest Trends in Grinding - New products / technologies

Get to know about cutting edge technologies like Machining to Grinding (MTG). Understand the usage of patented NQ, NQN, VTX Grain – Bond technologies to reap benefits to the extent of 2x-3x in dressing skips along with higher material removal rates, retaining high part quality. Learn about the usage of such premium grains to grind exotic, high alloy content materials.

## MODULE#3\*

### Super Abrasives Basics & Grinding

Get an in-depth understanding of grain properties of cBN & diamond grains and the bond systems for super abrasives along with the wheel nomenclatures. Explore the power of vitrified cBN & diamond abrasives in high speed & high precision manufacturing of crankshafts, camshafts, bearing & gear components. Understand electroplated, metal, resin bonded wheels and their applications in rough and precision industries & tool industries.

## MODULE#4\*

### Dressing Tool, Dressing Concepts & Optimization techniques

Learn the dynamics of conditioning the grinding wheel and also conserving it to get a longer tool life. Get to know to select a dressing tool and the solutions that are available to dress a conventional and a cBN grinding wheel. Understand the parameters involved in dressing like; dressing overlap and dressing speed ratios to make the best use of a grinding wheel.



## **MODULE#5\***

### Tools for Optimization of Grinding Process- Power Analysis & Vibration Analysis with case studies

Lead the way into I4.0 with digital tools and high-end sensors to get deeper insights into the grinding process. With the help of Norton experts, learn to decipher hidden vibrations in the system and the grinding power signatures to improve part quality and wheel life. Understand how to prevent machine breakdowns and reduce machine downtimes by moving towards predictive maintenance actions.

## **MODULE#6\***

### Cost Reduction Techniques and Case Studies

Learn to approach grinding as a system and understand the hidden costs involved in producing a ground part. Learn to make informed decisions based on technical case studies on the right usage of grinding wheels and parameters to bring down manufacturing costs, improving rejections leading to revenue and asset enhancement.

## **MODULE#7\***

### Coolant Considerations

Learn the importance of fluids in grinding and its successful applications. Understand types of coolant, design consideration of nozzles, flow rates, filtration techniques for process optimizations. Get to know the effects of coolant pH and concentrations on grinding wheel performance.

## **MODULE#8\***

### Trouble-Shooting Methods in Precision & Rough Grinding applications

Get to know tested and proven techniques for quick troubleshooting to resolve issues like chatter, burn marks, poor surface finish, geometric, size & taper etc. Learn to optimize the grinding process during a new part development or during changes in input conditions or machine health conditions.

## **MODULE#9\***

### Grinding Wheel Saftey

Get familiarized with best practices for handling a grinding wheel with precautions to be taken before mounting a grinding wheel or during storage of grinding wheels. Learn about wheel mounting techniques, static balancing, the importance of blotters that would aid in preventing mishaps or accidents.





## CUSTOMER SPEAKS

**1.**

“It was an extremely good learning experience with precise presentation, swift response and clarification on doubts that we had.”

Senior Executive  
Leading Bearing Manufacturer

**2.**

“The session was good and very informative. There is high-quality information shared right from the basics of abrasives to manufacturing to safety and new technologies.”

Senior Executive,  
Leading Auto Ancillary

**3.**

“Training Program has benefited our team members across manufacturing, production engineering, tool management, ME and even quality. We have received positive responses, especially from younger people.”

Manager,  
Major Auto OEM





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