



# DETECTIVES WHO FIND ANSWERS TO DIFFICULT GRINDING PROBLEMS

**C**omplete Grinding Solutions (Springboro, OH), has been engaged by a number of companies in the aircraft and heavy equipment manufacturing industries to develop proprietary processes for grinding parts that have been treated using the HVOF (High Velocity Oxy-Fuel) process. This thermal spray technique is capable of depositing corrosion and wear resistant materials like Chromium carbide in a layer that is dense, strong and brutally hard.

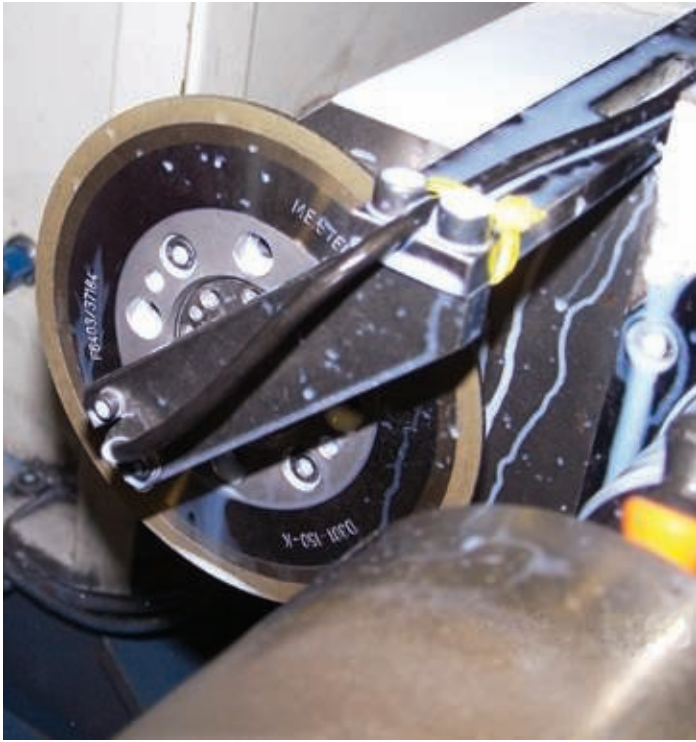
With the HVOF process, coatings can be up to 1/2" (12 mm) thick, presenting a surface that looks very much like the foam on a cup of coffee. Aircraft and heavy equipment manufacturers appreciate the ultimate protection the coating affords to critical parts. However, they are faced with the problem of developing a cost effective process for grinding this difficult material down to the required finish and geometry specifications.

This is exactly the sort of problem that Complete Grinding Solutions (CGS) thrives on. This ISO

9001 certified company, founded in 2006 by Beat Mauer and Raphael Obrecht, performs five advanced manufacturing services related to grinding: training, consulting, process development, prototyping and small- to large-production work.

Its 1500 sq. ft. facility is equipped with a “fully loaded” Studer S40 Universal Grinder capable of grinding just about anything— ceramics, carbide, silicon carbide, exotic alloys, glass, rubber, etc. The company also has a Studer S33 grinder and both grinders are used for prototyping and production work. During a typical week one partner will be keeping projects moving forward on the Studers while the other could be traveling anywhere in the world on a training or consulting mission.

According to Beat Maurer, CGS recently worked on three HVOF grinding process projects, each for manufacturers on different continents. “These materials are so hard, that they can only be ground with diamond wheels. The wheels and dressing tools



*On Machine Dressing of Meister's vitrified diamond wheels results in exceptional consistency, surface finish and geometry*

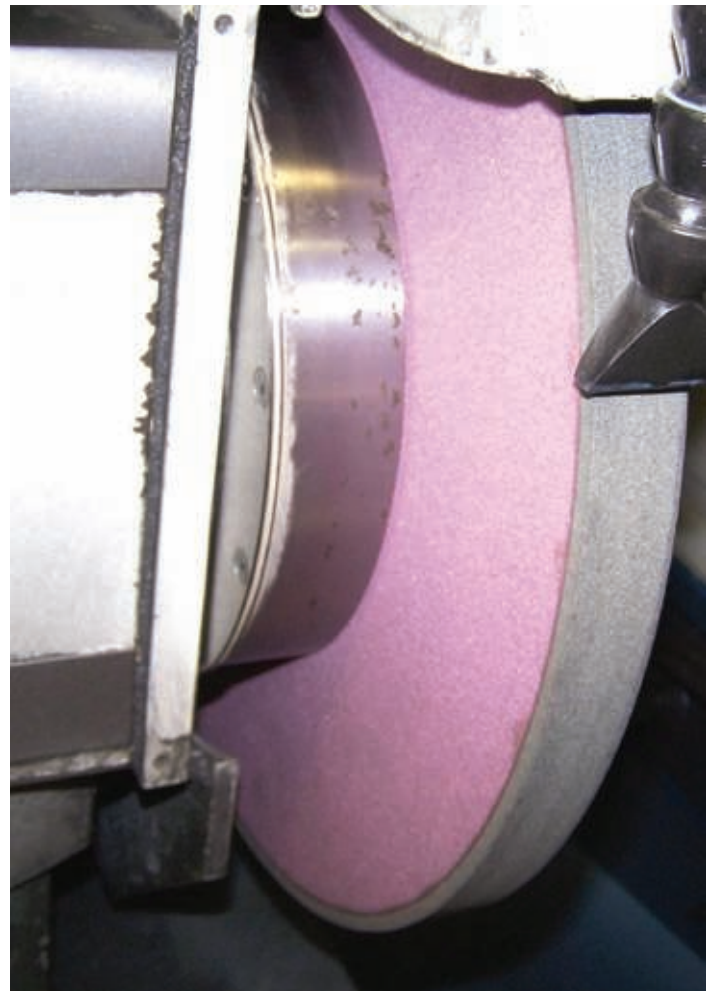
are customized to meet the exact requirements of the application by Meister Abrasives USA. With the combination of their excellent grinding wheels and our tools and superior grinders we can put these processes together relatively quickly”.

For these applications, CGS has developed a hands-off grinding process in which the Meister Abrasives vitrified diamond wheels are dressed on the machine at specified intervals. “Although these particular wheels are very hard, they also break up readily so we can easily get to the next layer of diamond during the dressing cycle,” Maurer said. He added that on-machine dressing at the right intervals results in parts with exceptionally consistent surface finish and geometry.

Maurer indicated that some of the HVOF-coated parts that will be made at the customers’ plants can be very large. CGS has been very successful at grinding prototype parts on the Studer S40 machine and scaling the process up to much larger equipment. “When a company is going to purchase a customized diamond wheel that might cost \$10,000 to \$15,000, they have to be sure that it will work well on their equipment. We provide our customers with that level of assurance”. ■



*Grinding Detectives: Complete Grinding Solutions owners Beat Maurer and Raphael Obrecht*



*Meister Vitrified Diamond Wheels are customized to meet the precise requirements of the application*



grinding.com

Tim McMurdo • 937-847-1222  
tim.mcmurdo@grinding.com