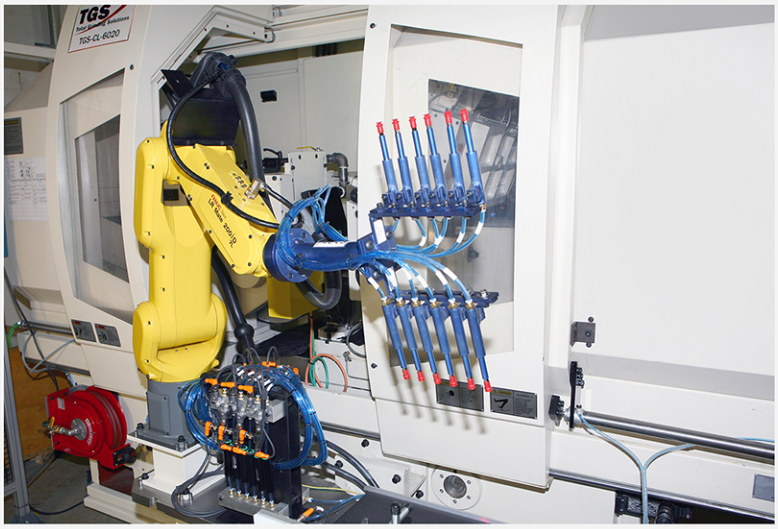
Total Grinding Solutions Case Study

New Centerless Grinder Keeps Pace With Demanding Production Schedule

With words like quality, innovation and superior service defining this global manufacturer, it was only natural that the company would seek a partner with equally high standards when it came time to source its new centerless grinder. As part of its expansive product line, this well-established Midwest-based manufacturer cranks out millions of shafts each year, ranging from 1.5" to 8" in length and 1-1/4"-1-1/8" in diameter. With grinding considered a critical manufacturing process, even a moment of grinder downtime is too long when trying to keep up with this nonstop parade of shafts. So, when the manufacturer's centerless grinder could no longer keep pace with its brutal schedule, the project's lead manufacturing engineer knew that it was time to look for a replace ıent.

Complicating the search was the need to find a machine that could handle the company's myriad part sizes and diameters with minimal changeover time. Robustness was an equally important factor in selecting the new machine. "While some potential grinder companies had adequate machine offerings, they just didn't understand how important the grinding process is in our manufacturing process," explained the engineer. But the story was different when the company approached Total Grinding Solutions (TGS).

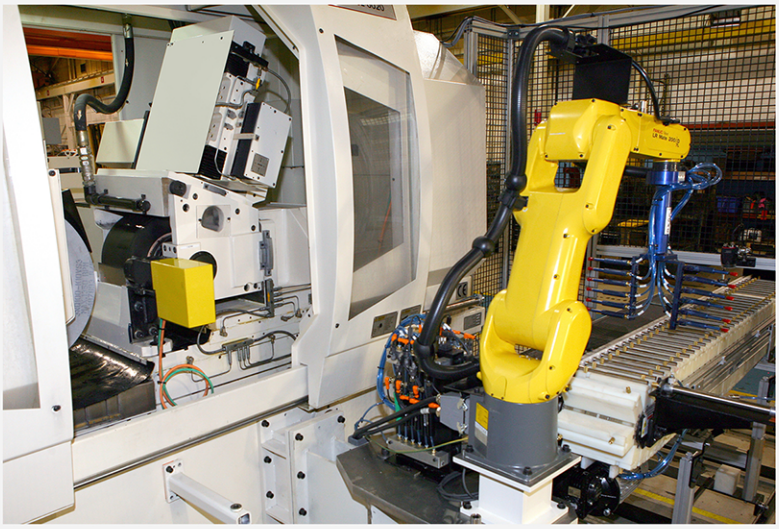
Dawn of a New Centerless Grinder



Engineering and building a new centerless grinder require in-depth knowledge of the machine tool's mechanical, hydraulic and electrical systems, along with software and automation expertise. TGS founders Dan Geddes and Joseph Giacalone have extensive experience and skill in all these areas and are highly familiar with global automated grinding operations, so when they recognized a gap in the market for a technologically advanced yet moderately priced centerless grinder, they made it their goal to design and produce that grinder. Along the way, Geddes and Giacalone additionally developed a number of unique machine enhancements. "By eliminating troublesome hydraulics and focusing on accurate automatic wheel balancing and balanced spindle motors, we strived to produce a machine that would keep machine vibration in the sub-micron level," noted Geddes.

"When we explained our manufacturing process to Dan, he knew exactly what we needed," said the engineer. With hundreds of different part sizes to process, TGS incorporated two machine upgrades to ensure that parts were handled properly. First, a custom part pusher assembly was placed next to the load conveyor to ensure consistent part pick-up by the robot. Second, an advanced vision monitoring system was attached above the load conveyor to check incoming parts for size and shape and to eliminate potential—and sometimes catastrophic— misfeed.

Robot Enhances Grinder Operation



A FANUC robot was added to the grinder to ensure accurate, consistent part loading throughout the machine's three-shift workday. The manufacturing engineer was impressed: "This was the first time we brought automation to this particular division. After a few expected growing pains, the robot is running flawlessly." While consistent loading is the main benefit, the robot also eliminates the need for constant human supervision, allowing the operator to focus on other profit-generating tasks.

"What we have is a machine that is very robust, repeatable, and easy to run. When it's time to switch parts, we make a few minor adjustments and it's off to the races."

Cognizant of its mission to "exceed customer expectations each and every day," and knowing that its worldwide customer base is dependent upon its products, the manufacturer has also committed to consistent preventive maintenance to keep this important machine tool running efficiently around the clock. As the manufacturing engineer said, "This machine is really easy to run and maintain."

Editor's note: Since the initial order of the TGS machine, this manufacturer has ordered two additional TGS machines with sophisticated automation systems.