



Metalworking

Mitutoyo Profilometer Cuts Machining Waste, Revs Up Productivity

James Langford | Aug 27, 2024

One measure of a tool’s usefulness is how many different jobs it can do. Another is its accuracy.

Mitutoyo’s new profilometer, the *SurfaceMeasure 1008S*, delivers on both counts. The sensor is guaranteed for an accuracy of 20 microns along with a vertical-axis repeatability of 0.5 micron, and it can handle inspections from panel gaps on automobiles to tire shapes, connector pins and food, the company says.

The tool is the most accurate in its class, which appeals even to customers performing jobs that don’t require that degree of precision, says Michael Browner, product manager for sensors at Mitutoyo America.

Generally, “having more accurate sensors and tools in a new application makes CNC machinists more comfortable with the unknowns for which they can’t make adjustments until the process is up and running,” he says.

The 1008S, which Mitutoyo describes as a two- or three-dimensional non-contact laser line sensor, is the first in a series. It can be attached to stationary as well as flexible inspection points, including the arms of robotic equipment, for real-time quality control. The scanner can also be used alone or in an array.

Performing inline non-contact scans on each item going through a production line lets machinists identify right away which ones aren’t meeting specifications, Browner says.

The quick turnaround enables them to avoid the quality-control gaps that occur with periodic inspections of samples by hand, sometimes forcing the scrapping of large numbers of workpieces—an expensive problem, especially for small shops that run on tight margins.

Scrapping costs can be even higher for firms working with exotic metals and alloys required in the aerospace industry as well as the developing electric vehicle market.

When integrated correctly into a machine setup, the 1008S can “crank up your production capability, save you money on scrapping and free up capacity for both equipment and people,” Browner says.

Better, Faster Production—Less Expensively

That's vital for machine shops and manufacturers grappling with a widening workforce shortage as industry veterans, many from the baby boom generation, retire and fewer younger people seek to fill their positions.

About half the estimated 3.8 million manufacturing jobs open by 2033 may go unfilled if business leaders are unable to bridge the labor and skills gaps, according to a study by the *National Association of Manufacturers* and consulting firm Deloitte.

Not only is the pool of potential employees shrinking, but both labor costs and productivity demands are rising. One result is heightened interest in the automation made possible by tools like the SurfaceMeasure 1008S, Browner says.

"Everybody wants more, faster and for less now," he explains. "Some of the applications I've been working on are very simple but they're high-speed and the customers need to figure out how to make things better, make more and scrap less."

Improving quality control isn't the only immediate benefit. By taking on work that may once have required a group of employees to measure parts by hand, Mitutoyo's scanner enables businesses to reassign them to tasks that are "much more productive, valuable or beneficial," Browner says. "It really helps to make things better."

Depending on how many of the scanners are installed and where, they can identify pain points in a production line where employees might need better training or equipment may need maintenance.

More Adaptable Than a CMM

"You can use the data they supply to narrow down problems, perhaps reassign some tasks and figure out ways to make other improvements," Browner says.

The scanner, which includes an image sensor, camera lens and Class 2 blue laser, is controlled through a simple, intuitive web-based interface. Along with pattern-matching and optical character recognition, it includes measurement tools for cuts from grooves to countersink holes.

The tool has an IP, or ingress protection, rating of 67, under standards set by the *International Electrotechnical Commission*, or IEC. The first number, 6, indicates that the device is dust-tight, and the second, 7, means that it's protected from the effects of temporary immersion in water.

Unlike a full coordinate measuring machine, the Mitutoyo SurfaceMeasure 1008S has a modular design that users can integrate into a machine setup for specific tasks, then repurpose in a different configuration afterward.

"It's always going to scan and measure, so as long as that's what you're doing in that part of the machine, you're good," Browner says. "It has the potential to be used in multiple setups over the lifetime of ownership."

Which machining tasks could you simplify with the Mitutoyo SurfaceMeasure 1008S? Tell us in the comments below.