

Automation Comes to Beam Profiling

The beam focusability factor, or M^2 , which is one of the most widely accepted values for establishing laser beam quality, involves a difficult and time-consuming process to quantify a single beam profile. However, if you're a manufacturer of Nd:YAG lasers, you can ill afford to deliver a system that has not been properly calibrated. Precision drilling, welding, micromachining and metrology applications demand narrow, well-characterized beams. This means interrupting the production process to perform a series of grueling measurements. Or does it?

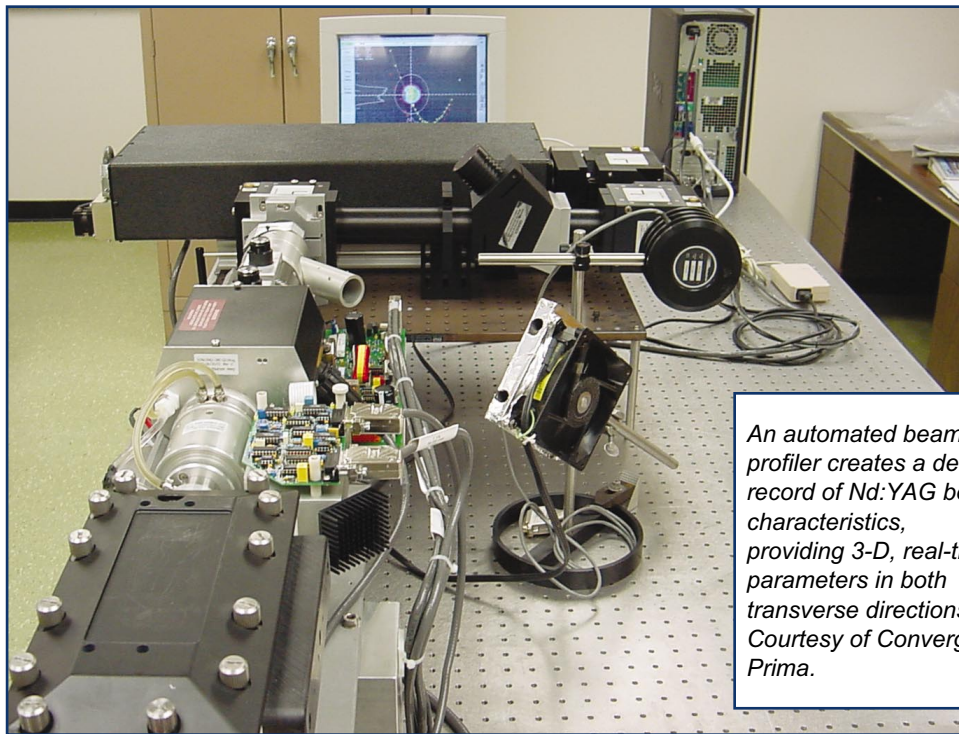
Dennis Defocy, Aurora product manager for Convergent Prima, was selected as a beta tester for Spiricon's YAG:max beam profiler about

characteristics. The YAG:max provides three-dimensional, real-time parameters in both transverse directions. "Without this device, we are going in blind," Defocy said.

It's a time-saving device as well. Finding M^2 values involves many steps, he said. "There's quite a lot of math involved." However, with the YAG:max, "the math is done for you, and beam divergence is displayed."

The profiler is still in Defocy's lab and has not been released to full production, but once his analysis is complete, he believes it will become a "critical step" in finishing each laser. "What we are going to get is a more defined laser in the end."

He believes that the instrument will enable



An automated beam profiler creates a detailed record of Nd:YAG beam characteristics, providing 3-D, real-time parameters in both transverse directions. Courtesy of Convergent Prima.

five months ago. His company uses other beam analyzers for their line of CO₂ lasers, but this is the first that can characterize Nd:YAG lasers.

"The biggest selling feature is that it's very automated," Defocy said. After evaluating the device for three to four weeks, he decided that it would be useful for manufacturing and R&D in the company's production of YAG lasers.

He found that one of the major benefits of the device is that it gives him the ability to automatically measure beam propagation

the company to create a detailed record for each laser that leaves the production floor, allowing a piece-to-piece consistency so that each system will have specifications and information to travel with it to the customer. □

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