Epilog's New FiberMark System

Epilog's new FiberMark flying optic laser marking systems is the first Flying Optics fiber laser system, and offers advantages over traditional galvo beam delivery systems

With the increasing need to engrave tools and parts in an affordable way, Epilog Laser is introducing the FiberMark system at IMTS in Chicago. This new fiber laser system is an entirely new way to think about how lasers can mark metal in an affordable, convenient way for businesses.

Fiber lasers were first developed in the late 1980s for communication and military applications. Epilog is using the laser technology for commercial and industrial applications marking bar codes, logos and serial numbers on parts and tools. "The industrial marketplace has been looking for a way to mark their tools with unique identifiers in a way that combines affordability and speed," explained Mike Dean, sales and marketing director of Epilog Laser. "This addition to the Epilog Laser product line is exciting because it offers a unique format for a fiber laser that hasn't been created before."

Since 1988, Epilog Laser has been designing and manufacturing CO_2 laser systems that can engrave and cut wood, acrylic, plastic, fabric, rubber and many other non-metallic materials. Due to the frequency of the CO_2 laser, it will not mark directly onto metal without using a two-step metal marking process. The metal must be coated first with Cermark® or Thermark® metal marking spray before being engraved. While the mark is permanent, the process is too time consuming for most applications. The wavelength of the fiber laser being used in the FiberMark system allows the laser to mark metals with no additional coatings, increasing customer throughput.

Epilog feels that it is in an ideal position to combine the proven mechanics of their CO_2 laser systems with the fiber laser technology. "We've been incorporating the most technologically advanced motion control system in each of our laser systems for years by combining linear encoder technology along with servo motors for the highest quality engraving at tops speeds from a CO_2 laser system. We realized that we could take the proven technology that we've been using in our product line and add the fiber laser technology to have a perfect blend between the two," stated Dean.

Galvo vs. Flying Optics

There are two primary ways that a laser beam can be directed to the work piece. This can be achieved through the movement of the entire optical assembly, which is called "flying optics", or by rotating the mirrors with a fixed lens, called a "galvo" system. "All of the fiber systems on the market today feature the galvo design, which offers some benefits in speed and throughput," explained Dean. "The flying optics system's use is a unique format for a fiber laser system," explained Dean. "The FiberMark is one of the first systems to feature a large flatbed with and flying optic design. We decided that it was best for our applications because we were able to take our highly successful flying optics design that we use in our CO_2 lasers and transfer the technology to a fiber laser system."

Galvo systems are typically found in a two-axis setup where the laser beam is deflected in two dimensions. Unlike the flying optics systems, galvo machines keep the focusing optics stationary and rely on focusing the laser beam by deflecting it off a mirror on a flat surface. The position of the focus is proportional to the angle of the beam and a longer lens focal length is required to achieve a larger field size. Since only the mirrors have to be repositioned for the engraving, they allow the highest speeds of engraving, but will go out of focus very quickly, limiting the engraving area.

Benefits and drawbacks to both the Flying Optics and Galvo System:		
	Flying Optics	**Galvo System**
Marking Area	Accomodates large pieces up to 24" x 12". Allows for part palletization. Parts indexing is based on a simply x/y zero positioning.	Small marking area, usually limited to around 6" x 6" Difficult to position parts without expensive camera recognition system.
Marking Speeds	Slower speeds on smaller images, but marking times on larger images are similar.	Extremely fast on small images.
Software	Open architecture allows use with common software, including BarTender, CorelDRAW, and Adobe software.	Typically a proprietary software is developed.