The FiberMark laser system from Epilog Laser, Golden, CO, was introduced as a new, easier and more economical way to mark metal and other materials. It incorporates state-of-the-art “fiber” laser technology with flying optics beam delivery and offers a large engraving area.

According to Epilog, this system was spurred by the increasing demand for permanently marked and engraved metal parts. It is designed for commercial and industrial applications such as marking bar codes, data matrix, serial numbers and even graphics onto items like tools, production parts and many other metal surfaces, although I was pleasantly surprised at the unit’s ability to handle a wide range of personalization applications.

Fiber lasers were first developed in the late 1980s for telecommunications and military applications, but they’ve become increasingly popular in recent years for various metal marking applications. Despite being around for nearly 20 years, fiber lasers are relatively new to our industry. This is, in part, due to the fact that they have been very expensive until recently.

EJ decided to take a closer look at Epilog’s FiberMark system, which is touted as having considerable advantages over traditional Nd:YAG lasers with galvanometer-based beam delivery systems. This is the first YAG-wavelength laser designed with smaller businesses such as award shops in mind. Its size, price and versatility give engraving shop owners something new to consider if they’re in the market for a new piece of equipment, especially if they do a lot of metal marking.

I’ve tested many CO₂ lasers and one very nice Vanadate laser over the years and I would be proud to own any one of them, but I can’t say that I’ve ever fallen in love with any of those machines. After testing Epilog’s FiberMark system, however, I can truly say that I’m in love! I love the consistency, the ease of operation and the design, but most of all I love what it can do to a sheet of gold engraver’s brass!

Whenever I’ve written a product review...
review for a publication, I have done my best to give a complete, accurate, fair and unbiased review of the product being tested. I try to point out the pros as well as the cons so readers can make up their own minds as to whether or not they think the product is worth further consideration. However, I must say right up front that it was very difficult to find anything adverse about this laser system.

I spent hundreds of hours creating various types of products with the FiberMark system. I tested nearly every kind of material I could think of, from paper, cork, metals and plastics to glass, acrylic, wood and various films and chemical coatings. Just about everything I touched as I worked around the shop went into this laser to see what it could do, and I was pleasantly surprised by some of the results.

**Laser Basics**

I would imagine that most professional engravers today have a pretty good understanding of CO₂ lasers, the type used for the vast majority of awards, personalization and related applications. But if you’re like I was not too long ago, you may be scratching your head wondering about many of the more “industrial” lasers such as YAGs, Vanadates and fiber lasers. Not only do these lasers work differently from their CO₂ counterparts, but they open the door to a broad range of new engraving, marking and cutting capabilities that most of us could only dream about a few years ago. So let’s start at the beginning with some background about lasers.

Generally speaking, a laser beam is created by stimulating or energizing some material using either light or electricity. When the source material is stimulated it emits “photons” (visible or invisible light) of a single wavelength. Light travels through space following a wave-like pattern, and the “wavelength” is the distance, measured in nanometers, from the top of one wave to the top of the next.

There are many different types of lasers and they all have their own characteristics, but one of the most important attributes affecting a laser’s capabilities is the wavelength of the light it emits. The different wavelengths are important because the material to be marked or engraved absorbs some wavelengths and not others. For instance, wood absorbs a CO₂ laser’s wavelength (10,640 nm) very efficiently, yet it does not absorb a YAG or fiber laser’s wavelength (1064 nm) at all. Therefore, wood can be easily marked with a CO₂ laser, but not at all with a YAG or fiber laser.

Fiber, YAG and YVO₄ (Vanadate) lasers all generate a wavelength in the range of 1055 to 1070 nm. A nanometer is one billionth of a meter, so the range of 1055 to 1070 nm is effectively the same wavelength—especially for marking and cutting applications. The difference between the fiber, YAG and YVO₄ is how the laser beam is created. YAG (Yttrium Aluminum Garnet) and YVO₄ (Yttrium Orthovanadate) use crystals that are laboratory grown. When the crystal is subjected to intense light energy, either through a flash-lamp or diode light source, they emit photons that are then directed through an output device to create the laser beam.

Fiber lasers are a relatively new development born from the telecommunications industry. Fiber optic cable is doped with Ytterbium and stimulated with LEDs (light emitting diodes). Fiber lasers have the advantage of being completely solid-state devices that have no moving parts, require no maintenance or alignment and require very little cooling. Fiber lasers create this very useful wavelength of light (1055 to 1070 nm) much more effectively than the other laser technologies. In summary, fiber, YAG and Vanadate lasers produce essentially the same wavelength of light. This wavelength is useful for marking metals and some engineered plastics.

The greatest difference between CO₂ lasers and this class of solid state lasers is the wavelength of light they generate. CO₂ laser tubes produce a wavelength of approximately 10,600 nm which is 10 times greater than the fiber / YAG / Vanadate lasers.

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**Settings used to make samples using a 30 watt FiberMark:**

<table>
<thead>
<tr>
<th>Material</th>
<th>Speed</th>
<th>Power</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anodized Aluminum</td>
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<td>100</td>
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</tr>
<tr>
<td>Stainless Steel</td>
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<tr>
<td>Engraver’s Brass</td>
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<td>Black Acrylic</td>
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<tr>
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<td>Rowmark Glow Plastic</td>
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<td>Sublimation White Metal</td>
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</tr>
<tr>
<td>Black Slate</td>
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</tr>
</tbody>
</table>
Engraved steel side cutters.

This engraved machine gun part is made of hardcoat anodized aluminum.

Stainless steel divot tool.

Laser engraved cast iron putter.

Laser engraved brass tag.

Laser engraved Freeman Medal.

Lasered steel tray.

This new aluminum Mac Book has been personalized with the FiberMark.

Aluminum cork screw.
al interactions differ at these different wavelengths. Most organic material (wood, leather, cork, textiles, acrylics, etc.) do not absorb a fiber/YAG wavelength very well, but they do absorb a CO$_2$’s beam. Similarly, the CO$_2$ wavelength is too large to be absorbed well by most bare metal materials. So to sum things up, fiber lasers are now considered to be state of the art among the YAG-class lasers, which offer a whole range of capabilities not available using CO$_2$ lasers.

One of the fundamental differentiations between a YAG or fiber laser and a CO$_2$ laser has to do with the laser’s spot size, i.e. the diameter of the circle of laser light where it meets the work surface. On average, the FiberMark’s spot size is about 10 percent of the diameter of a CO$_2$ laser. For example, whereas a CO$_2$ laser often gives a spot size of .005”-.007”, the fiber laser can produce a spot of .0005”-.001”.

This small spot size gives not only extreme power density but exceptionally high engraving resolution. This resolution is fine enough to be able to create highly-detailed photo images and text down to 2 points in size.

**Laser Marks**

Those of us who have been using CO$_2$ lasers for some time have grown accustomed to certain types of laser cuts and marks. One of the most common is called “ablation,” where you use the laser beam to cut an incised groove into a material by vaporizing the surface with heat from the beam. Sometimes this is accompanied by a color change and/or a frosting of the cut, such as often observed with cuts in acrylic. There are also a number of laser marks involving engraving coated materials such as anodized aluminum or using a laser fusible coating which turns black upon exposure to a laser beam.

However, as I started using the FiberMark laser, I found that I had to learn some new laserer terminology because the system allowed me to create a number of laser marks that were simply not possible using my CO$_2$ laser. This was quite exciting because the system allowed me to mark a lot of different (metal) items that were previously unengravable in my shop. Here’s a brief summary of some of the marking options available using the FiberMark.

By changing the parameters of the laser system and/or laser source—speed/power/frequency (pulse rate)/focus, I was able to produce different types or colors of marks. The people at Epilog categorize the marks in three different general types, at least when engraving stainless steel: Etch, Polish, and Anneal. Other metal materials such as bare aluminum or coated zinc, nickel, black oxide (used as rust inhibitors) will not produce variable colors.

An “etch” is where the laser removes a layer of metal from the material surface and also produces a color change. Most metals are amenable to this type of mark. Color changes range from light brown to near-black, again depending on the material and the laser’s settings.

The metallurgical definition of “annealing” is a heat treatment that alters the microstructure of a material causing changes in properties such as strength and hardness. According to IPG Photonics, the manufacturer of the fiber laser source, annealing through laser processing actually consists of growing a dense cohesive oxide coating on the surface, and melting is specifically not required. Therefore, the term annealing may be a misnomer, but it is used so often to describe laser metal marking that I won’t try to change it here.

An annealed mark with lasers is achievable on steel and titanium material, by heating the surface of the material effectively changing the color of the material surface. This process does not remove any metal material. Annealing is a common application in the medical device industry. Depending upon material type and laser settings, achievable colors include reds, blues, greens, oranges, yellows and black.

When lasered, some materials, especially metals, produce a white-colored mark. Epilog calls this a “polished” mark. This is similar in concept to an etched mark, but by reducing power and increasing speed and frequency, you can create a white-colored mark on most metals and also on some dark-colored plastics. Regardless of the type of mark you’re making, the FiberMark laser system will produce marks in both raster and vector format.

**About Epilog’s FiberMark Laser**

The FiberMark laser is contained in a cabinet much like other lasers on the market. It’s a “flying optics” based laser—the same beam delivery method used with most CO$_2$ lasers. Until the FiberMark system came along, most all of the metal marking lasers like the YAG and fiber lasers used galvanometer-based beam delivery systems. While galvo motion control systems run much faster, they also severely limit the engraving area. In comparison, the FiberMark covers a full 12” x 24” working range.

The top speed of the FiberMark laser is 80 inches per second (ips), but rarely will you need to run this laser at top speed. Even so, it engraves most materials very quickly. The settings can be adjusted using the control panel on the front of the laser, allowing users to control the laser’s speed and power output, laser system focus and the frequency of the laser beam. Frequency refers to the laser’s pulse rate which varies from about 20-80 khz for the 20 watt laser to 50-100 khz for the 50 watt system.

The speed and power settings are much like those on a CO$_2$ laser. The ability to adjust the frequency of the laser is somewhat like fine-tuning the energy source to maximize its ability to mark a wider variety of materials. While all of this may sound a bit intimidating at first, it doesn’t take long to grow accustomed to the combinations necessary to get the most out of this system.

To help make it easier for anyone else who may use this laser, we’ve included a sidebar with a chart that shows the settings which I found provided the best results with the various materials and products listed using a 30 watt model. The FiberMark is available with power ratings of 10, 20, 30 and 50 watts, but I think the 30 watt model offers more than enough power for the average engraving shop. For the most part, the amount of power will determine the speed at which something can be marked. The less power you use, the slower the speed must be to produce the same lasering effect on the substrate.

The engraving table on this machine is 12” x 24” and it comes with a 3” standard lens. I used this lens for all of the testing I did, and I honest-
ly saw no need to use any other focal lengths. However, for those who may need them, there are two other lengths available. A 1.5" lens allows the rotary device to accept a slightly larger diameter object (4.25"), while the 5.5" lens does a better job handling items that have a slight curvature due to its increased depth of field. The 3" lens can be taken out of focus slightly to accommodate some very minor curvatures, but it’s limited to a curvature of about $\frac{1}{32}$" depending on the material. A 5.5" lens should increase the depth of field by about $\frac{1}{8}$".

Air assist is mandatory for this laser, but it works differently and is used for different reasons than with a CO$_2$ laser. Since this laser isn’t suitable for working with wood and other combustibles, knocking down flame-ups is of little concern. Instead, the FiberMark “Air Curtain” was designed to reduce or eliminate the potential for engraving debris and other contaminants to reach the system’s lens, mirrors and bearings.

That brings up another interesting difference between a CO$_2$ laser and a fiber laser designed for cutting metal. Depending on the material and the wattage used for laser etching, there is a tendency to have a buildup of residual material (a dust-like coating) around the letters being engraved. This dust is not hazardous but it should be kept away from the laser optics and the moving parts such as bearings. Epilog’s “Air Curtain” is designed to blow this residual material downward and away from the X-axis bearings using air flow generated by the exhaust fan or filter system.

Epilog includes a small compressor with a FiberMark laser purchase (shops with a dry air supply can use their own air source if they desire as only about 30 PSI of pressure is required), which is used to blow a stream of air through perforations in a metal tube located within the X-beam. To further protect this area, a mechanical barrier is also located on the bottom side of the X-bearing to help reduce the risk of contamination from debris.

The FiberMark also offers a red dot laser at the push of a button, which I found to be very helpful when positioning odd-shaped items. And, as with all Epilog laser systems, the FiberMark uses Accupoint Motion Control Technology. In short, this is a linear encoder timing system that ensures the laser beam will be fired in the right place and at the right time. This technology accounts for the exceptional detail that can be achieved as the motion control system moves in increments as small as .00008".

Epilog’s “Dashboard” print driver software used to control the laser is clean, simple and easy to learn. It allows both raster and vector engraving to be done separately or in combination. For projects that require more control over settings, the Dashboard Color Mapping feature allows you to set independent speeds, power, frequency and focus settings based on the color used in your job layout. It’s also a convenient way to test materials at various settings since it allows you to perform multiple engraving tasks in a single job setup.

The FiberMark is intended for use with Windows 2000, XP, Vista or Windows 7 but its open architecture allows it to be driven by almost any Windows-based program including CorelDRAW, Illustrator, Bartender, Word, Excel and AutoCAD, among others. My testing only involved the use of CorelDRAW X3 and X4.

Epilog’s Quick Connect system offers fast and easy connection options using either a high-speed Ethernet connection or a USB cable to connect to your computer. And other than general cleaning, the manufacturer reports little if any maintenance required for the first 100,000 hours of operation (that equates to over 11 years if you were using your laser 24/7). Even when “heavy” service is required, it typically involves a fix that most people can do themselves with a little telephone tech support.

The FiberMark uses a 4" exhaust vent located on the back of the laser which must be connected to either a standalone filtration system or an exhaust system that moves the air and gases generated by the laser outside the building. It also offers LED cabinet lighting for better viewing of the engraving area. The light bar is located on the right-hand side of the engraving table with 12 ultra-bright LEDs, which can be easily turned on and off using a switch on the top of the lid. Because of the special green-colored safety acrylic used on the cover,
The laser bed has LED lights to illuminate the work area.

this lighting is usually necessary if you have any hope of being able to visually monitor what’s going on inside the laser.

The laser has a front-loading door that pulls down to make it easier to load large sheets or parts. There’s always the temptation to try to defeat the safety latches to keep the door open in order to engrave extra long items such as metal baseball bats. However, lasers like this which produce light in that wavelength are extremely dangerous to the human eye, much more so than even a CO₂ laser. For this reason, it’s imperative that users not try to bypass the system’s safety features.

It’s also worth noting that the safety glasses commonly used to protect the eyes when working with CO₂ lasers DO NOT protect you against the FiberMark’s light! The kind of safety glasses that do protect eyes against this type of light cost about $600, which means the wise choice would be to always use the safety mechanisms on the machine that are meant to protect users from harm. The light beam on this machine is invisible and unlike a CO₂ laser can pass through glass and Plexiglas, potentially causing permanent blindness.

The FiberMark system incorporates a vacuum hold-down table, which uses the airflow from the exhaust fan to hold thin sheet material flat to the surface of the work table so it stays put during engraving. This is a nice feature as it saves considerable time when engraving plastic and aluminum sheet stock. However, I found this feature was more efficient if you cover any exposed holes on the table with paper to maximize the laser’s ability to flatten the item being engraved.

Epilog includes the FiberMark floor stand with this system, but it can also be placed on a desktop or sturdy table. I highly recommend using the stand designed for this system since the unit tends to move when engraving. And the fact that it weighs about 150 pounds means that if you try placing the unit on a light duty table it could result in a disaster.

Although not required for proper operation, I recommend users spend time making sure the laser system is level during installation. I say this because the focus is far more critical for a fiber laser than for a CO₂ laser due to the laser’s small depth of field or range of sharp focus. This often necessitates compensating for materials that are not perfectly flat. The use of a small level can fix this problem, but only if the engraving table is perfectly level to start with. Again, since focus is so critical with fiber lasers, the engraving table on the FiberMark is controlled by four threaded rods as opposed to the three rods that most CO₂ lasers use.

The ability to focus and to move the “home” position are both features that are accessible on the front control panel. Being able to change the “home” position to be anywhere on the table allows easy focusing or setup of unusual-shaped objects such as deep bowls. It also allows for easier engraving of items that don’t fit well into the typical upper left-hand corner home position.

A cylindrical engraving attachment, which I did not test, is available for the FiberMark. This device allows you to engrave cylindrical items up to 3” in diameter (4.25” with a 1.5” lens). The device actually accommodates tapered products or other items that have a different diameter at each end.

The operating noise of this laser is low despite the fact that it has two fans that keep the air-cooled laser source within limits—a job that required a chiller just a few short years ago. While talking on the phone near the system did pose a problem, carrying on a face-to-face conversation was not an issue.

Interestingly, as mentioned earlier, during certain types of cuts the FiberMark produces dust-like particles which accumulate in and around the engraving area. This “dust” is about the consistency of a fine powder. Accordingly, I strongly recommend having a small shop vac close by to pick up these tiny bits of metal that are cut away by the laser. Keeping these picked up and out of the machine is bound to bring longer life to belts and other moving parts, not to mention having a clean work table.

What Can the FiberMark Do?

Okay, enough of the small talk. Let’s get down to the nitty-gritty of what this machine can do. YAG lasers are known for their ability to mark all kinds of metal. In our industry, they’re famous for their ability to mark metal ink pens. For many shop owners, that’s where the discussion ends but it really shouldn’t. Epilog’s FiberMark laser is capable of marking a wide variety of materials, some with spectacular results.

Out of the hundreds of items and materials that I tested with the FiberMark system, the list that follows illustrates a small sampling of what I found to work well. I have also provided information about how the results compare to using a CO₂ laser and an idea of how fast this laser can run the test job. In putting this list together, I am reminded that although
the specifications are interesting, what really matters is whether or not we can make money with this machine. That’s why I’ve only included the materials I tested which I feel represent potential profit centers.

**Plastic Engraving Stock**—Most engraving plastic typically doesn’t work well with a fiber laser. Engraving plastic remains in the domain of the CO₂ laser and rotary engraving machines. However, it’s fair to say there are exceptions. For instance, medical grade plastics, called “engineered plastics,” engrave very well. White ABS plastic also marks quite well with this system. The fiber laser doesn’t actually remove any plastic material. It simply turns the white material black (dark gray).

Gold, silver and bronze engraving plastics work well with the FiberMark. While I don’t know for certain, I suspect it has to do with the thin metal foil that gives the plastic its metallic color, which separates this plastic from others for fast, clean engraving.

The most exciting discovery I witnessed when it came to experimenting with plastics was with Rowmark’s LaserGlow material. While this product is intended to be used as a backing panel for tactile lettering when creating signage, the material turns black when engraved with this system. The surface of the plastic isn’t affected other than a change in color in the lasered area.

The reason I find this so interesting is because this material could be used to make name badges for people who work outside in poorly lighted areas. For example, they might be used for airport personnel, coal miners, etc. It might also offer some promise when it comes to making awards for children. I mean, what kid wouldn’t think a glow-in-the-dark plaque would look cool hanging on their bedroom wall?

**Solid Surface Material (Corian, etc.)**—These materials are very high-ly-compacted forms of plastic which makes them beautiful and extremely durable, but it can also make them difficult to laser. Using the FiberMark, the materials could be marked very easily, although not very deeply. The result is a mark that’s ideal for Rub ‘n Buff and produces a beautiful and unique product. If you’re into making your own plaques from scrap materials from a countertop company, these plastics work just like wood and offer some very nice profit potential. Before you set out making these items, however, you would be wise to do your own testing first. There are many different versions of solid surface material on the market and not all brands are alike. While the pieces of material I tested came out just fine, there may be other types out there that do not work as well.

**Formica**—Formica is a brand name that has come to reflect any number of melamine plastic laminates used for making countertops of all kinds. Light-colored “Formica-type” products turned dark brown when lasered with the FiberMark. These materials can be purchased from a number of sources including those that supply materials to cabinet makers. With a little experimentation, you might find that they could offer some interesting backgrounds for making framed plaques, though I found that only the light-colored products provided good contrast.

**Acrylic**—While clear acrylic is not affected by a fiber laser’s light, I found that black cast acrylic works wonderfully! Running fast and cool, the beam does not remove any of the plastic but, instead, turns it snow white and raises the surface slightly to create a very interesting award or sign. Although there are only a few premade black acrylic awards available in today’s market, there are some and as fiber lasers become more common in our industry, there are sure to be many more.

**Glass**—While clear glass does not mark with a fiber laser, something very interesting does occur if you place a piece of flat glass flush against a sheet of brass. The FiberMark will not mark the glass directly, but it will transfer the gold color of the brass onto the glass, leaving a permanent gold mark! This is very interesting. You can use the back side of engraver’s brass for this process, which means you can laser engrave the front of the brass for another paying job. Using this technique adds no cost to the glass job, but it will surely catch the customer’s eye and may even garner additional profits for your shop.

**Glass Mirror**—Another material that engraves especially well with the FiberMark laser is silver-backed glass mirrors. Although the silver coating also engravesh well with CO₂ lasers, the fiber laser leaves a mark that is perfectly transparent while the CO₂ tends to etch the glass. This difference allows you to use brighter colors when...
When you engrave jet black marble with a CO₂ laser, it turns white. The same is true when using the FiberMark laser. Other black marble products also do well with the system, but any marble with a lot of white grain makes the engraved mark difficult to read.

Black Slate—When using this material, the FiberMark is capable of achieving a fairly deep-etched mark that can easily be filled with Rub ‘n Buff. Black slate is often used for engraving photographs because of the nice contrast and detail it offers. This material also works well with a CO₂ laser.

Ceramic Tile—Ceramic tiles cost about 20¢ each at a home supply store such as Lowes or Home Depot. When engraved with the FiberMark, tile offers a very shallow but smooth engraving. A CO₂ laser, on the other hand, can leave sharp shards when engraving this same material. The beauty of creating a smooth, lightly engraved surface is that it works well with Rub ‘n Buff, creating a nice contrasting color.

Laser engraved tiles are great for making murals, insets for tile walls, trivets or keepsakes to be used as coasters or even as art to be placed on easels. These items make great gifts for class reunions and, because they’re so inexpensive to make, they are very affordable. The samples I made took about three minutes each and, if you create a multiple layout template, you can engrave 10 at a time.

Stainless Steel—This is a material that traditionally marks great with a YAG or fiber laser. Raw stainless steel can be marked for a wide variety of applications such as tags for chemical plants, gas valves, military applications, etc., while polished stainless steel is commonly used for jewelry. Stainless steel is the most common and affordable material used to make serving trays, bowls, etc., for the awards and catering industries. All of these types of products mark with a beautiful permanent dark brown to black annealed mark with high-detail resolution.

Stainless steel is also available in sheet stock especially for the engraving industry. Again, this material is very well-suited for the FiberMark and can be used to create some absolutely stunning plaques and awards. If you’re getting tired of making the same old black brass plaques, this is something that will really make your work stand out in the crowd!

Chrome—Chromium is a common coating used on metal and is found on everything from serving trays to tools. One potential market for YAG-wavelength lasers like the FiberMark is engraving tools. A professional mechanic’s tools are very expensive and commonly mixed in with other tool sets. Auto mechanics will pay to have their tools marked.

Another market for personalizing tools is just about any business or organization, including the military, where people have to sign out tools and then return them when they’re finished. These places typically like to have a bar code engraved on each of the items in their tool inventory. The FiberMark does an excellent job of creating a dark mark suitable for scanning that can be done quickly and permanently. I engraved a chrome-plated socket in as little as 30-45 seconds.

Electrical Metal—Metal components like industrial switch covers, outlet covers, conduit, etc., in the electrical trade are referred to as EMT.

A multiple-part metal marking job.
This material marks well with the FiberMark laser, producing a dark mark about equal to that obtainable on stainless steel.

**Copper**—Other than some copper-plated steel, there really isn’t much available to the engraver’s market in the way of copper. However, just because my curiosity got the best of me, I decided to test a piece of copper just to see how it would react. I used a piece of copper pipe I had lying around and, just in case anyone has a need for marking this type of material, it produced a black mark.

**Pewter**—Just as with the stainless steel, pewter and a look-alike material called states metal marked very well with the FiberMark, creating a dark black permanent mark on the test piece.

**Silver**—Again, just like most of the metals we’ve discussed so far, sterling silver or silver plate marked very well with the FiberMark, producing a nice dark mark.

**Raw Brass**—Raw (uncoated) brass products such as key chains, star paper weights, money clips and a host of other items can be engraved in seconds with the FiberMark laser. This system eliminates the need for diamond or burnish engraving these types of products. There’s no more wondering or guessing how thick the plating is because with this engraving system, it doesn’t matter. The FiberMark produces a dark brown mark in just seconds with no chemical coatings, no mess and no fuss.

**Lacquered Brass**—Of all the different types of metals I tested with this machine, this is the one that won my heart. What you can do with a sheet of lacquered satin gold engraver’s brass is just spectacular! A FiberMark laser will turn the engraved areas dark brown, but that’s not why I’m so amazed. The magic lies in what happens after using a blackening agent (chemical oxidizer) on the engraved item. Unlike rotary engraved brass where blackening can be difficult or even impossible on large letters, the brass engraved with the FiberMark laser blackens the first time, every time, regardless of the letter size.

This means that you can engrave bitmaps, photos and other images that would either never work with a rotary engraver or take so long they would not be profitable. Customers love gold brass plaques, however, many engravers have quit offering them because of all the engraving limitations. Many of these limitations are eliminated when engraving this material with the FiberMark as it engraves quickly, beautifully and, best of all, it’s easy to blacken. This is definitely a money maker!

**Bare Aluminum**—Aluminum marked well every time I tested it with this laser. Even when the aluminum was coated with paint or some other material, it always came out with a quality mark. This material usually did not blacken like steel. When engraved using a high speed and low power setting, it left a white-colored polished look that was quite legible and even elegant when applied to engraving stock. When engraved using low speed and high power, aluminum permits a dark gray mark.

**Gold Engraver’s Aluminum**—This material is another outstanding find! When the right settings were used, not only did the FiberMark remove the gold coating but, if you apply a little blackening oxidizing solution (I used the one intended for brass), it turns dark. This opens up the opportunity to use this very inexpensive aluminum not only for trophy plates, but for plaques! Granted, you may not want to use this material for high-end plaques, but it is more than suitable for youth sports plaques and a host of other products such as paper weights and inserts for ad specialty products.

**Engraver’s Black Brass & Black Brass Plated Steel**—Both of these metals engrave very well with the FiberMark. The mark left on black-plated steel is a little different from that of a CO₂ laser. The CO₂ leaves a highly-reflective gold letter while the FiberMark leaves more of a flat gold on both metals.

**Photographs**—Scanned photographs (300 dpi) worked surprisingly well without any additional software or manipulation of the photograph. Undoubtedly, this has to do with the FiberMark’s exceptionally high resolution and small spot size. Several encoding methods are available in the driver to help maximize the appearance of a photograph. These are referred to as “dithering” patterns. I tested all of them but found little difference in the final images. They all looked very good.

**Conclusion**

When I bought my first CO₂ laser in 1990, I had no idea how to justify its $25,000 cost. Yet, to my amazement, that system paid for itself in just 30 days. After spending some quality time with the FiberMark laser from Epilog, I feel like this system has the potential to pay for itself in a fairly short amount of time. Granted, it may take a little longer than 30 days, but I believe anyone who is serious about starting or growing their business can’t go wrong with this type of laser. Just as CO₂ lasers transformed our industry and led to a huge explosion in the number and types of products we could offer, I believe the technology in the FiberMark system will be the future of the industry.

Now, I’m not saying that fiber or YAG lasers will replace the CO₂ laser, but this technology will help to extend the CO₂’s capability into areas that can help shop owners reap huge profits in new markets. For example, the ability to mark steel opens up prof-
Just as it did when lasers first en-
tering the market, it will take some
some time to jump into this pond. While
CO₂ lasers now cost as little as $8,000
for an entry-level model, the Fiber-
Mark starts around $31,000 and can
climb up to the $50,000 range. The
model I tested sells for $39,000 in
the U.S. Although this is nothing to
sneeze at, we should keep in mind that
many CO₂ lasers were much more ex-
pensive when they first came out com-
pared to what they cost today. As I
mentioned, my first laser cost $25,000
20 years ago. However, speaking for
myself and many others I’ve talked
to over the years, purchasing that first
laser was the best investment we ever
made. I have no doubt that those who
end up with the FiberMark will feel
equally satisfied down the road.

Now, as I mentioned at the begin-
ing of this article, I always try to be
fair and include at least one thing I
don’t like about the product I’m re-
viewing, so here it goes. With the
exception of this machine not doing
everything a CO₂ will do, I was re-
ally hard-pressed to find something to
gripe about. It’s not because I haven’t
tried to find something to dislike, it’s
just that I haven’t found anything that
jumps out at me... except for one tiny
little thing.

The default print driver table size
is 8.5” x 11” and each time this has to
be changed manually. Changing this
involves going in through Windows/
settings/printers/properties and edit-
ing the values stored there. It’s chang-
able but it’s a nuisance.

If you fail to change this setting to
match your drawing tablet in Corel-
DRAW then the laser just beeps at
you. There’s no harm caused by this,
except that you have to send the job
again with the correct page size. There
you have it. That’s the only issue I had
with the FiberMark laser.

Well, that sums up my review of
Epilog’s FiberMark laser, which I feel
could be the next evolution in the en-
graving and awards industry. This is
a great little laser that I couldn’t find
any fault with. Now, I must confess
that I spent a lot of time playing with
this machine and trying to make it do
tings it wasn’t capable of doing. That
leads me to offer one word of caution
to readers—make sure you have real-
istic expectations before making such
a costly investment. Do your research,
find out the differences between fiber
and CO₂ lasers and then determine if
you want to be creative and try new
products and materials.

I’ll admit, at first I wondered just
how much money one could make
with this type of machine, but after a
little thought and a lot of testing I soon
began thinking of all kinds of possibil-
ities and I became a huge fan. Stain-
less steel, chrome and other metals
top the list of money makers followed
by satin gold engraver’s brass and ce-
ramic tile. I see excellent money mak-
ing opportunities in these three items
alone—enough to justify the cost for
a large shop or a shop that does a lot of
metal.

As time goes by, the cost of sys-
tems like this may come down. The
question is: if you think you want this
system in your shop should you run
out and get it now or wait for the price
to drop? I can’t answer that because it
will likely depend on your intentions.
If you plan to use the system to its full
capability then you might be wise to
capture the market for these types of
products while the competition waits
on the fence for the price to drop. If
the question is not if, but when, then
I would say the sooner you can save
your pennies to make it happen the
better because, as the old saying goes,
the early bird gets the worm.