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30
YEARS
EPILOG LASER



LASERVIEW

Industry Insights, Techniques, and Real World
Laser Applications from Epilog Laser

888.437.4564 | sales@epiloglaser.com | www.epiloglaser.com



In 1988 Epilog Laser became the very first manufacturer of small-format laser engraving systems. Epilog’s revolutionary systems opened the world’s eyes, not only to what could be accomplished with a laser, but how easy a laser is to use.

Epilog Laser has worked hard to become the **leader in the laser engraving, cutting and marking industry**. We are innovators. We are problem solvers. We are committed to designing and manufacturing the highest-quality laser systems, right here at our Golden, Colorado headquarters.

We’ve been in the laser business longer than anyone else and it shows - from creating the first laser to “print” directly from CorelDraw, to designing the first rotary attachment, to marketing the first large-format table, to manufacturing the first 100 watt laser system, Epilog is known for implementing useful features that enhance our customers’ ability to work more efficiently and gain higher profits.

Explore our brochure to learn more about our made-in-the-USA laser systems and to find out why Epilog Laser has been the top choice of engravers for nearly 30 years.

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8 FACTORS CONTRIBUTING TO GROWTH

Laser engraving was once thought of as a process only used by industrial companies that could laser mark items for corporate use. However, today - with numerous small businesses cropping up and the rise in the maker movement- laser engraving has moved from just a small number of companies offering services to a growing industry that takes only a small investment to give home businesses or small vendors a little something special to offer customers.

Over the past five years, the market for laser engraving has grown substantially, managing a compound annual growth rate (CAGR) of 5.5 percent through 2016, according to market research firm IBIS World. Driving this growth is an increased level of consumer demand for customization and personalization of products such as smart phones, tablets, cutlery, wood, metal and other materials is becoming a popular option. In addition, businesses are using laser engraving for promotional items, plaques and signage.

Over the next five years, revenue and unit shipments are expected to continue to increase thanks to laser engraving becoming more easily available and affordable. Product lines such as [Epilog Laser's Zing Series](#), as well as the continued growth in disposable income and discretionary spending, allows small businesses to offer unique touches to generic products.

Other factors contributing to this increasing rise in laser engraving range from an increased interest in personalization, to rising accessibility, to the maker movement, to branding and new use cases for engraving.

Factor 1: Increased Focus and Interest in Personalization

If you have ever visited the e-commerce website Etsy, it is easy to see how the growth of laser engraving has blossomed over the past few years. The focus on personalizing an item is a way to take something as simple as a pair of wedding champagne flutes and turn them into a personalized, more meaningful gift.

A simple search for "laser engraved" on Etsy shows a plethora of vendors offering an endless amount of personalized products for the taking including jewelry, wedding glasses, craft supplies, bags and purses, computer supplies, personalized dog collars and tags, woodworking, pint glasses, pens, tools and golf tees, just to name a few.

With the trend in small home businesses becoming increasingly popular, laser engraving has become a way for those selling trinkets and numerous other items to differentiate from the competition. Many vendors on Etsy even offer blanket laser engraving services, meaning you send the item you want engraved to them and they send it back with whatever logo, name or graphic you want on it.

In business, with popular electronics being produced by the millions, laser engraving gives a personal touch to an item that many people already have. Engraving custom graphics, names or logos on these mass-produced electronic gadgets is a great way to set something apart from an ever-increasing crowd of products.

Factor 2: Now More Accessible

Previously, laser engraving machines and cutting systems were hard to come by. Supply was limited and, more importantly, the cost to own a machine exceeded what typical home businesses or small vendors were willing to shell out in order to garner the technology.

Today, laser engraving is no longer just for big factories; potential buyers can own these machines for far less than they may realize. Whether you are looking to purchase or lease-to-own a laser, or even rent time on one, there are locations worldwide that can cater to your needs. Epilog has its laser engraving/cutting tools in a wide variety of shops around the globe and has numerous [distributors](#) throughout the world. It also offers academia and universities ways to find systems by geographic location.

This accessibility has given rise to the adoption of laser engravers in fabrication labs, makers, school labs and more in order to teach students and give differentiation for small businesses to customers who are looking for a bit more than generic products.

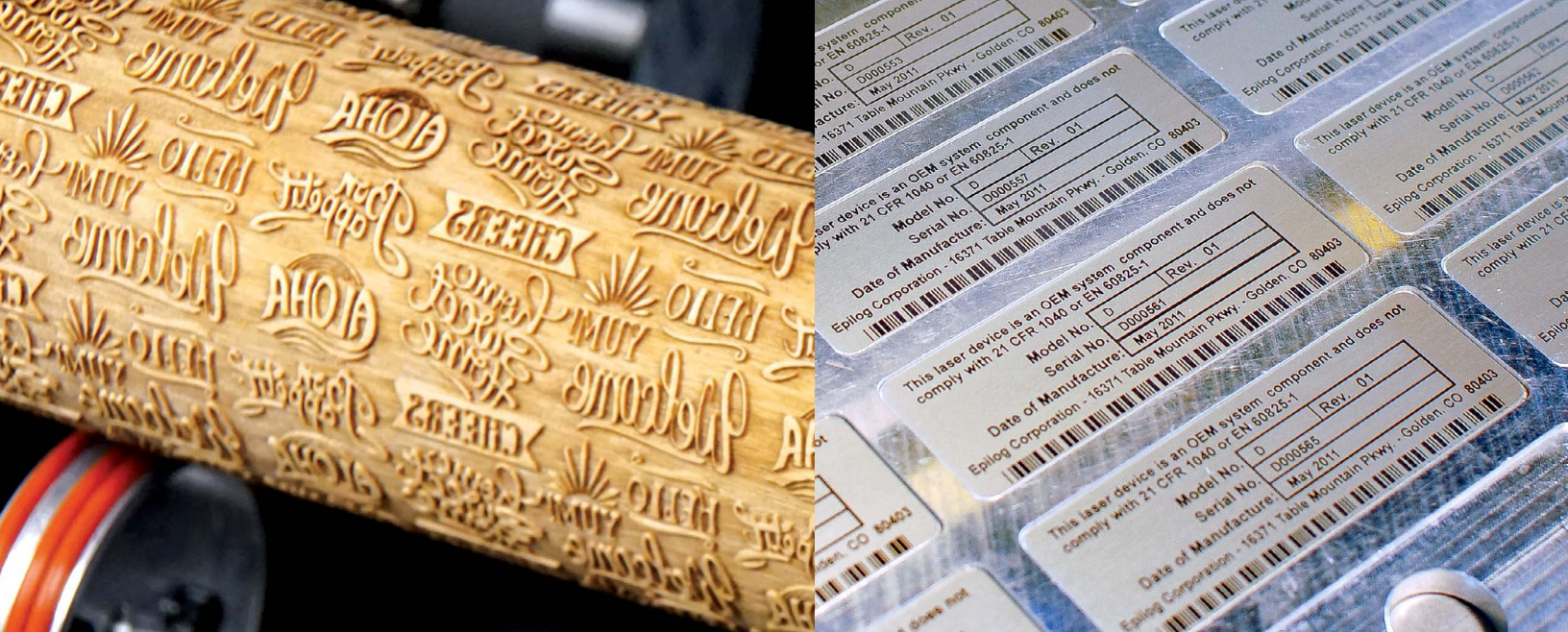
Factor 3: The Maker Movement

Makers are growing every day as consumers continue to explore the satisfaction of doing things themselves. Do-it-yourself has become a rallying cry for many to learn new skills, create new products or save costs on a project that would otherwise be outsourced.

Kickstarter and crowdfunding have played a huge role here, giving rise to different products that are now available from different people. Some of these products would never see the light of day if not for crowdfunding as the primary support means for their endeavors.

Hobbyists and tinkerers have shown a strong interest in laser technology and its capabilities. Laser engraving can bring ideas from concept to sellable form through prototyping, embellishment engraving or even by starting a custom engraving business.





Factor 4: Rise in Industrial Uses

Beyond small businesses, laser engraving is seeing a rapid rise in use cases for technology in the industrial segment. One of the bigger segments is in identification security where laser engraving is ideal for credit cards, ID cards, sensitive documents and other items that require increased safety measures.

Laser engraving permanently marks an item, providing a check and balance against counterfeit products or replicas. In ID cards, multilayer formats are used to alter the color of the lower layer's pigments without affecting the top transparent layer. This ensures a product is safe from fraud, produces high quality images and text, is tamper-proof and customizable to each organization's needs.

Laser engraving can provide serial numbers, time stamps, part numbers, component labels, date codes, bar codes, or industry specific codes. Needless to say, laser engraving has become an important tool in parts identification, inventory control and tracking, safety and warning notification and loss prevention.

As technology advances, future uses for laser engraving to provide an additional security layer could be found in robotics, 3-D printing and the automotive industry.

Factor 5: Rise in Branding

Branding not only gives corporations a greater presence in the world, but it is also becoming a sneaky way to deter theft of products and corporate assets. By laser engraving a company logo or name on corporate-supplied items, it is clear to see who owns what. Someone looking to sell a stolen item might have a tricky time explaining as to why it has a large logo or corporate name on it.

Since lasers can easily mark barcodes and serial numbers, these items for corporations can be better tracked than generic electronic items, while at the same time providing an extension to natural branding activities.

Factor 6: Affordable Pricing

While laser engraving and cutting machines have become more popular, prices have remained stable in the market. Since, laser engraving is a very competitive market (due to the advent of low-wattage systems with lower quality engraving), those that want to own or lease a laser engraver or cutter can do so without breaking the bank.

Factor 7: More Accessories

Advances in laser cutting and engraving have led to the development of new accessories being on the market, leading to more and better uses. Rotary attachments, optical lenses, air compressors, pin tables and photo processing software, all available from Epilog for its Legend line of [laser engravers](#), give users the opportunity to engrave objects that couldn't be done with the standard printer and provide for the best cutting results.

Factor 8: New and Different Markets for Laser Engraving

Lastly, while makers, Etsy and ID tracking are leading to greater use for laser engraving, they aren't the only ones. In fact, one of the reasons for future expansion of laser engraving tools is due to the development of new segments getting in on the action. These segments include woodworking, metalworking, digital and retail signage, model-making, apparel shops, fabric shops, gadgets and sports equipment.

These eight factors are contributing to the continued development in the laser engraver/cutting market that, after five years of impressive growth, appears to show no signs of slowing down



CHOOSING THE RIGHT LASER FOR YOU

Customization is one of the hottest trends in today's product marketplace. Everything from personalized MP3 players to branded glassware to one-of-a-kind wedding décor can be produced with the right tools, which for many businesses includes an Epilog Laser system.

Why invest in an Epilog? Having access to a high-quality and reliable engraving and cutting machine can open up virtually limitless income possibilities, even if you only plan to work your laser business part-time. Potential customers are everywhere: gift shops, restaurants, breweries and even large manufacturers with inventory marking needs will pay for your services. The laser allows you to turn imagination into reality, whether you're customizing existing products or rolling out entirely new creations.

Best of all, technology advancements have made high-quality laser systems more accessible and affordable than ever. Business startup costs are relatively low, and with the right approach you can recoup your investment in no time.

Choosing Your System

That's the why. But once you've made the decision to enter the exciting world of laser-based creation, how do you select the right laser system?

Epilog makes a wide range of lasers suited to the needs of businesses large and small. The Epilog product line includes:

- Zing series: Epilog's entry-level desktop CO₂ units, ideal for starting a business or adding a second laser to an existing business
- Legend series: Epilog's top-of-the-line CO₂ lasers
- Fusion M2 series: Epilog's dual-source CO₂/fiber lasers



Key Considerations

LASER SOURCE. The first question to consider is whether you need a laser produced by CO₂ or fiber — or both.

The laser beam wavelength of a CO₂ system makes it extremely versatile. It works on a wide variety of materials, performing both cutting and engraving on wood, acrylic, rubber, plastic, leather, fabric, paper and [numerous others](#). In addition, there is a range of materials that cannot be cut by a CO₂ system, but can still be engraved. These include glass, ceramic, stone, tile and coated or painted metals. Bare metal can be marked if it is coated, or a special marking solution is applied before engraving.

Fiber systems, by contrast, are optimized for metal marking and engraving. These systems are ideal for industrial marking — a subsection of the laser engraving market that involves less creativity, but also offers a high profit margin.

Epilog's dual-source lasers combine both types into a single machine, providing the ultimate flexibility of working with all materials.

TABLE SIZE. The laser system uses a table to hold the piece being engraved or cut. Epilog makes a variety of table sizes, ranging from 16 inches by 12 inches to 40 inches by 28 inches. The best rule of thumb is to consider the maximum piece size that you'll be working with. You'll also want to take into account your production space, as larger tables require larger machines. The entry-level Zing 16, for instance, includes a 406 x 305 mm table and measures only around 730mm wide by 562mm deep and 298mm high — making it ideally suited to desktop use (see [product info](#) page for exact dimensions). By contrast, the Fusion M2 40, with its 1016 x 711 mm table, takes up an area around 1537 mm wide and is 1048 mm deep and 1073 mm high (exact dimensions can be found on the [product info](#) page).

SYSTEM WATTAGE. In short, more wattage means cutting through thicker materials and engraving with quicker results. Match the system wattage to the material thickness you plan to work with, as well as your desired production speed and volume. A higher-wattage system will cost more up front, but will also make it possible to produce more with a speedier turnaround — which can quickly offset the additional cost.

BUDGET. The same principle that applies for wattage also applies to your overall budget. A larger, more versatile and more powerful system will cost more initially — but will also enable you to more quickly compensate for the expenditure. You'll want to consider the future of your business, as well — if you hope to grow and expand, investing in a system that matches your goal level of business (as opposed to your current state) can help you achieve that goal more readily.

Additional Considerations

SYSTEM NEEDS. Your Epilog system interfaces with a Microsoft Windows-based computer in much the same way as a printer does, and it can be networked via an Ethernet, USB or wireless router connection. While design applications like Adobe Creative Suite, AutoCAD and CorelDRAW are ideal for designing the files you'll send to the laser, almost any Windows-based software can be used. A dedicated print driver is also included with the system; no third-party software is required.

ACCESSORIES. A variety of both standard and optional accessories is available for Epilog laser systems; each [product line series](#) on the website includes a list of accessories that will work with the laser.

A very popular accessory is the rotary attachment, which allows you to engrave cylindrical items such as wine bottles, glasses, flashlights — you name it. The rotary attachment is available for most, but not all, of the systems in the Epilog product line. Other available accessories include vector cutting grids and pin tables that enable better edge cutting, as well as an air compressor that blows a constant stream of air on the cutting area in order to minimize heat and remove combustible gases. You can always add accessories later, but it's a good idea to investigate what's available as you narrow down your system choice.

TRAINING. You might be wondering how you're going to get this laser up and running once you've gotten it in the door. Not to worry: Each item in the product line series includes free access to a training suite of online videos and step-by-step instructions to walk you through the basics, from setup through running your first job. You'll also enjoy support from the rich resources of Epilog's own [Facebook page](#), the enthusiastic Epilog Laser Fan ([ELF](#)) community on Facebook, the free downloadable project files in Epilog's online [Sample Club](#), Epilog's monthly [e-newsletter](#), and more.





LASERS CUSTOMIZE THE BEVERAGE INDUSTRY

High demand for personalized items and the ability to further brand loyalty is driving growth in the laser engraving market.

As one of the best-selling brands of bourbon in the world, Jim Beam's products are popular amongst a variety of individuals – from those who enjoy the liquor, to those looking to gather paraphernalia to add to their collections, to those just want to give a unique gift to someone.

With high demand for customization of its bottles, glassware, barrel staves and barrel heads, the Jim Beam Urban Stillhouse turned to laser engraving to give these items a special signature look.

Jim Beam Urban Stillhouse uses three Epilog Laser machines — two 30 W laser engravers and one 75 W engraver — to customize products for birthdays, marathons, Father's Day, retirement parties, corporate events and much more. Customization has become a popular business for the store located in Louisville, Ky. – so much so that it's laser-engraving 60 bottles a day on average. When a marathon or other special event is occurring in Louisville, that number can jump to 700 bottles on any given weekend. Plus they are engraving at least one barrel head a day and about five to six barrel staves.

“Laser engraving gives us best-in-class performance,” says Grey Davis, manager of the Jim Beam Urban Stillhouse. “It gives us a connection to our customers. Laser engraving allows us to team up with companies to provide a unique keepsake for whoever they are giving it to. It not only supports our product, but also lets them know they are giving something that is unique.”

The Jim Beam Urban Stillhouse has expanded its use for laser engraving to cutting out Christmas tree ornaments. These are bottle ornaments that can be hung on a tree. They also make other items like refrigerator magnets and barrel bone placeholders.

Why Epilog?

By now, you can see that investing in a laser system for your business represents a cost-effective way to add detailed customization to a wide range of products; a proactive way to stay in front of your competition and become a one-stop shop for your customers; and an all-around fun way to make a side income, or even a living. But the Epilog product line does not represent the cheapest equipment out there. Why not go with an alternative system?

One reason is that cheap systems are often just that: cheap. Be sure to look very carefully at the technical specifications for any other model you may be considering. Other systems may have lower wattages, which translates to lower speed; may utilize glass tubes that need to regularly be replaced; and may not have readily-available service and support.

All Epilog machines are industry-level quality with minimal maintenance requirements, and the metal tubes with ceramic components employed in Epilog systems have the longest lifespan in the industry. In line with Epilog's goal of keeping its customers up and running, a top-notch technical support staff is complemented by an extensive online tech support library and the availability of overnight parts shipping. Every system also comes with a “no-exclusion” warranty — meaning that everything is covered in the event of a problem.

Moreover, Epilog Laser has been in the business for nearly 30 years and is a pioneer and leader in the industry. If you're looking to get involved in laser cutting and engraving, you owe it to yourself to check out Epilog. Get in touch with a distributor in [your area](#) today!



Jim Beam is just one of numerous beverage suppliers that are turning to laser engraving as a way to customize products, expand brand loyalty, and provide an easy way to make ordinary beverage accessories and in-house products unique.

Growth of laser engraving in the beverage industry is the result of these companies providing customers and businesses with value-added capability that goes beyond a traditional bottle or decanter. Instead a customized product is developed that gives a more personal touch while at the same time expanding brand devotion and opening new sources of revenue.



Laser engraving allows companies in the beverage industry — whether it is a winery, a craft brewery, microbrewery or distillery — to customize any in-house product or create awareness of a new or different promotion. While perfect for the alcoholic beverage industry, it is not limited to this and is being used across multiple brands for products such as special soda promotions, coffee mugs and limited edition water bottles.

The cool thing about having an in-house laser engraver, such as those offered by [Epilog Laser](#), is that you don't rely on a third party to do the work that could result in long lead times and, obviously, paying someone to do the work. Customized laser engraving is a business all to itself that saves on time, money and resources that would otherwise be spent sending products to a third party and then waiting to receive them back.

Laser engraving is done directly on the glass itself allowing custom signatures, names, logos or objects to be cut into beer bottles, wine bottles, shot glasses, pint glasses, tumblers, stemware and growlers directly and easily. All it takes is a special accessory, such as the [rotary attachment](#) for Epilog Laser machines, which quickly adjusts to nearly any size and is very easy to set up. The product sits on the rotary rim-drive wheels and turns as it is engraved.

As laser engravers work on a variety of materials including wood, cork, glass, fabric, acrylic and much more, accessories can be customized as well, such as special tap handles, coasters, wine corks, bottle openers and, yes, even those aforementioned Christmas tree ornaments.

This allows beverage companies to create unique items for giveaways, special events, and limited edition runs of beer or wine, as well as opens the door for a variety of new business ventures such as gifts, custom orders, parties, giveaways and more.

Getting up and running with a laser engraver is simple with a variety of systems, such as Epilog's, that range from small machines that are 16 x 12 inches all the way up to 40 x 28 inches. The systems also come with a variety of wattage configurations and software that gives instant access to most common and popular jobs for the beverage industry. This software allows beverage businesses to produce branded items quickly and easily.

For the beverage industry, laser engraving has moved from a niche market to a revenue-generating engine where companies no longer need a third-party to engrave custom products that promote branding, collaboration and a greater connection to customers.

So what are you waiting for? Get engraving!

INDUSTRIAL MARKET IS TURNING TO LASERS

The ability to customize specific items, protect intellectual property and include a higher level of safety measures is leading to the growth of laser engraving for industrial applications.

Beyond use for small businesses looking to add a logo or specific branding to in-house items, laser engraving offers a way to leave permanent marks on an item in the industrial segment, providing checks and balances against counterfeit products or replicas.

Laser engraving is a process where a laser beam physically removes a surface layer of material to expose a cavity that reveals an image the eye can view. In the case of fiber lasers, laser generation begins by pumping intense diode light into the end of fiber optic cables that have been doped with a rare earth element ytterbium. The energy from the diode light is absorbed by the ytterbium in the fiber optic cables and then released in the form of photons that travel down the optic cables. The photons that leave the optic cables create the laser beam at a wavelength of 1062 nm. The process is quick, and most laser engraving machines work with almost any kind of metal, plastic, wood and glass surface.

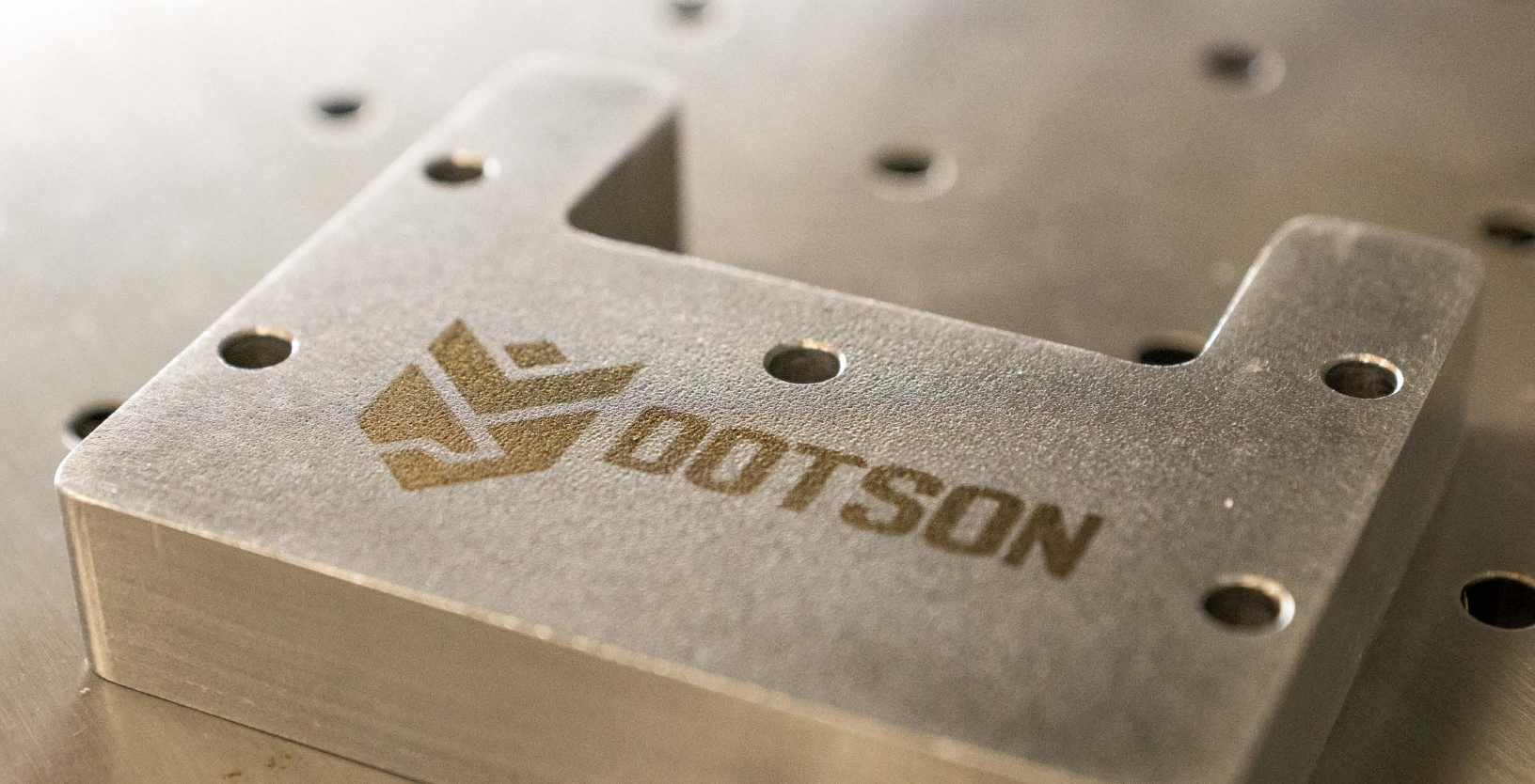
One of the biggest segments in the industrial market for laser engraving is in the identification security segment where laser engraving is ideal for credit cards, ID cards, sensitive documents and other items that require increased safety measures. In ID cards, multilayer formats are used to alter the color of the lower layer's pigments without affecting the top transparent layer. This ensures a product is safe from fraud, produces high-quality images and text, and is tamper proof, traceable as well as customizable for each organization's needs.

But this is just the beginning of what laser engraving offers to industrial businesses looking to improve their operations. Laser engraving can provide serial number engraving, time stamps, part numbers, component labels, barcode etching, data matrix code markings, branding and industry-specific codes. Laser engraving provides a very high-quality mark that is easily read by barcode scanners, RFID scanners or other inventory tracking tools.

Not surprisingly, laser engraving has become an important tool in part identification, inventory control and tracking, safety and warning notification as well as loss prevention.

As a result, many new industrial segments – including robotics, 3D printing, inventory management, banking, security, government agencies and the automotive sector – are beginning to flock to laser engraving in order to provide an added layer of security.





Benefits to Laser Engraving

Fiber laser technology, which is often used in the industrial marking sector, features a variety of benefits.

Unlike CO2 systems, fiber lasers can directly etch any bare or coated metal including stainless steel, machine-tool steel, brass, copper, nickel, silicon, titanium, aluminum, carbon fiber and much more. Regardless of what type of metal an industry is using to make specific parts, the latest robot or car innovation can be engraved.

Secondly, whether you are engraving one piece at a time or a table full of components, Epilog systems have you covered. Depending on the piece size and table size, laser engraving allows for hundreds of pieces to be engraved at one time. This is especially important when making ID cards or engraving barcodes on specific parts that need to be done quickly.

Lastly, large parts may be cumbersome and difficult to engrave, however, some machines such as the [Fusion M2 40 fiber laser engraver](#) from Epilog Laser, can engrave even the largest parts and tools up to 1016 x 711 mm.

Additionally, Epilog's fiber systems allow you to directly print from nearly any graphic software program to etch barcodes, serial numbers, images and much more.

Get Engraving

Whether an additional layer of security is needed to prevent fraud or duplication of intellectual property or an industry just needs to accelerate the time it takes to etch bar codes or other identification tags onto specific parts, Epilog Laser provides the machines that speed up time-to-market with ease-of-use that won't require any heavy lifting or much training.

5 COMMON MISTAKES IN LASER ENGRAVING

Whether you are an experienced engineer or a novice maker, learning the proper uses of design equipment to avoid pitfalls and mistakes takes time and experience.

From time to time, issues come up that leave designers wondering what they did wrong or how they could do something better. This is true in any field and laser engraving is no different.

Knowing how to avoid these mistakes so they don't come up again is half the battle. With that in mind, [Epilog Laser](#) offers five of the most common mistakes when it comes to laser engraving and suggestions for how to avoid them in future projects.



Mistake 1: Engraving Fabric but the Laser Burns through the Material

The first step in avoiding burning fabric with a laser engraving/cutting machine is to understand what fabric can withstand the process and at what temperatures. Heartier fabrics such as denim, canvas and leather can withstand higher power settings during engraving. But when it comes to delicate fabrics, it is important to start on a high speed setting and a low power setting—maybe 5 percent to 10 percent. Then if the fabric can withstand it, increase the power from there until you get the results you are looking for.

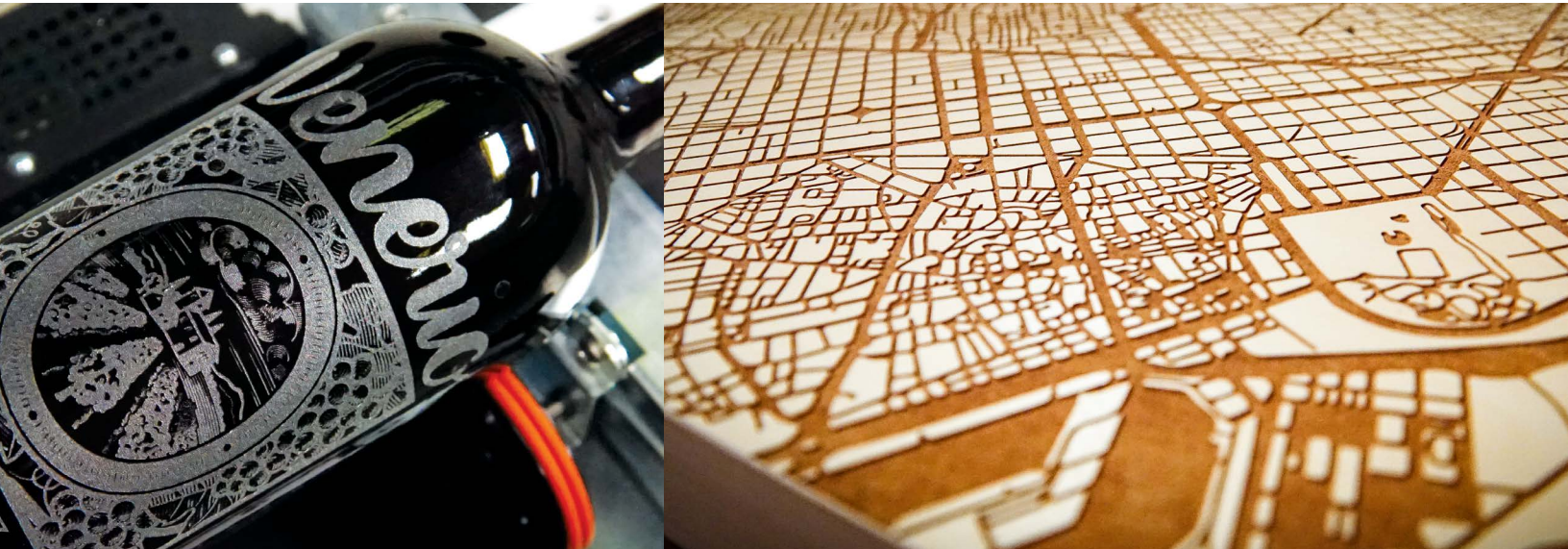
When it comes to direct-to-garment engraving, it is helpful to lower the dots per inch (DPI) at which you engrave. The higher the DPI, the more material will be removed. Engraving at a lower DPI helps ensure the laser just slightly vaporizes the top layer and doesn't burn entirely through the fabric. Most fabric engravings do fine at 150 to 300 DPI.

Mistake 2: Acrylic Doesn't Produce a Frosty White Engraving

More than likely, this is caused by using the wrong acrylic in the application. Two types of acrylics are typically used in laser engraving and both are suitable for different applications.

Cast acrylic sheets and objects are made from a liquid acrylic that is poured into molds that then can be set into various shapes and sizes. This type of acrylic is ideal for engraving because it turns a frosty white color when engraved, making it suitable for awards and plaques. It can be cut with a laser, but it won't give projects flame-polished edges.

The other type used in laser engraving is called extruded acrylic, which is formed into sheets by a machine. Extruded acrylic is generally less expensive than cast acrylic because it is formed through a higher-volume manufacturing technique. However, it does react very differently with the laser-engraving machine. This type of acrylic cuts cleanly and smoothly and produces a flame-polished edge; however, when engraved, it doesn't produce that frosted look, but rather a clear engraving. So make sure you are using cast acrylic if you want a frosted white finish.

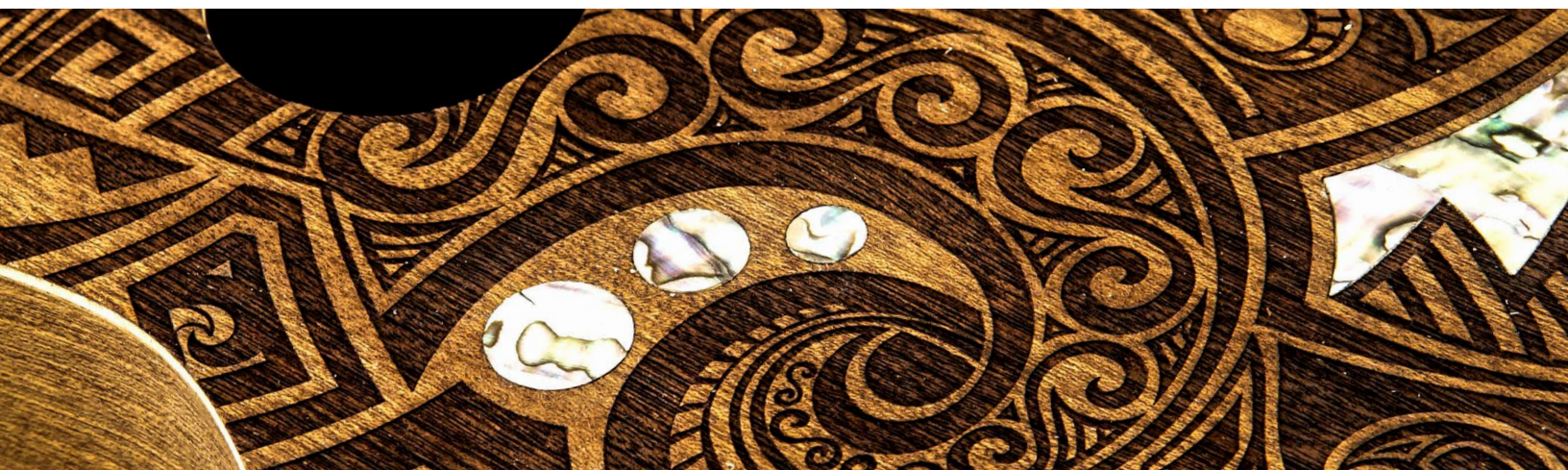


Mistake 3: Inconsistent Glass Engraving

Oftentimes, when a laser strikes glass it will fracture the surface but not engrave deeply or remove the material needed to engrave fully. The fractured glass surface will produce a frosted appearance, but can be rough and chipped depending on the type of glass that is being engraved. While the frosted look is desired, no one wants a rough surface or chipping.

In order to produce a smooth frosted finish, try incorporating one or several of the tips below:

- Use a lower resolution, about 300 DPI, which will produce a better result on glass as you separate the dots you are engraving.
- Change the black in your graphic to 80 percent black to improve the engraving quality.
- Run your laser engraver with Jarvis Dithering in the driver (this dithering pattern can be found in Epilog's print driver), which will help to provide a smooth finish.
- Sometimes, applying a thin, wet sheet of newspaper or a paper towel to the engraving area will help with heat dissipation and improve the engraving process. Just make sure there are no wrinkles in the paper after it is applied.
- Another way to dissipate heat is to apply a thin coat of liquid dish soap – either with your finger or a paper towel to the area you're engraving.
- Finally, if there are shards of glass after engraving, polish the area with a non-scratch scour pad.



Mistake 4: Wood Engraving Produces Different Results on the Same Setting

Wood is one of the most laser-friendly materials available not only because it can be cut very easily, but also because it engraves very well.

However, different woods have different reactions when they are laser-engraved and produce different characteristics. Lighter woods, like cherry or maple, produce a nice contrast where the laser burns away the wood, while denser woods require more laser power to cut or engrave.

When laser engraving wood, grain density can change dramatically depending on the type. Cherry, alder, walnut and maple have fairly little veins of grain in them, while oak has medium to large veins. For example, if a large box was engraved into a piece of cherry and a piece of oak, the box engraved into the cherry would have a very uniform appearance, the area engraved or the background would be smooth with little variation in height. The oak on the other hand would vary greatly in height and have a very non-uniform appearance.

Here are some tips when engraving with wood:

- Maple and alder are some of the most popular woods for engraving, providing a rich contrast.
- Bare wood engraving produces smoke and debris during the process and can become embedded into the grain of the wood. To reduce this effect, always engrave from the bottom up – this helps draw any smoke away from the engraving.
- When engraving stained wood, excess smoke and debris can be wiped off the surface of the wood after engraving with a damp cloth.

Mistake 5: Laser Engraver Doesn't Perform as Fast Anymore

Clean your machine! Much like other types of design equipment, a clean machine produces better results than one that is not properly maintained. Epilog includes the typical types of maintenance requirements in its user manual. But if a drop in performance happens quickly, checking and cleaning the optics may be the first step in correcting the problem.

Epilog recommends inspecting the optics in the laser—the lenses and mirrors—weekly and cleaning as needed. If you're cutting materials that produce more residue – like wood or acrylic – you may find your optics need to be cleaned more frequently. Typically, optics are clear gold in color and are bright and shiny. If they are cloudy or have smudges or debris, it's time to clean them.

Conclusion

The mistakes listed above are common among makers and designers that use laser engraving machines, especially those just beginning to use the equipment. But as you can see they are easily avoidable if you have the knowledge to correct the mistake.

[Epilog Laser](#) helps designers and makers through every step in the process of purchasing the right laser engraver, selecting the right materials to use, and understanding how to combat common mistakes including a library of knowledge base articles and helpful support for those experiencing challenges.