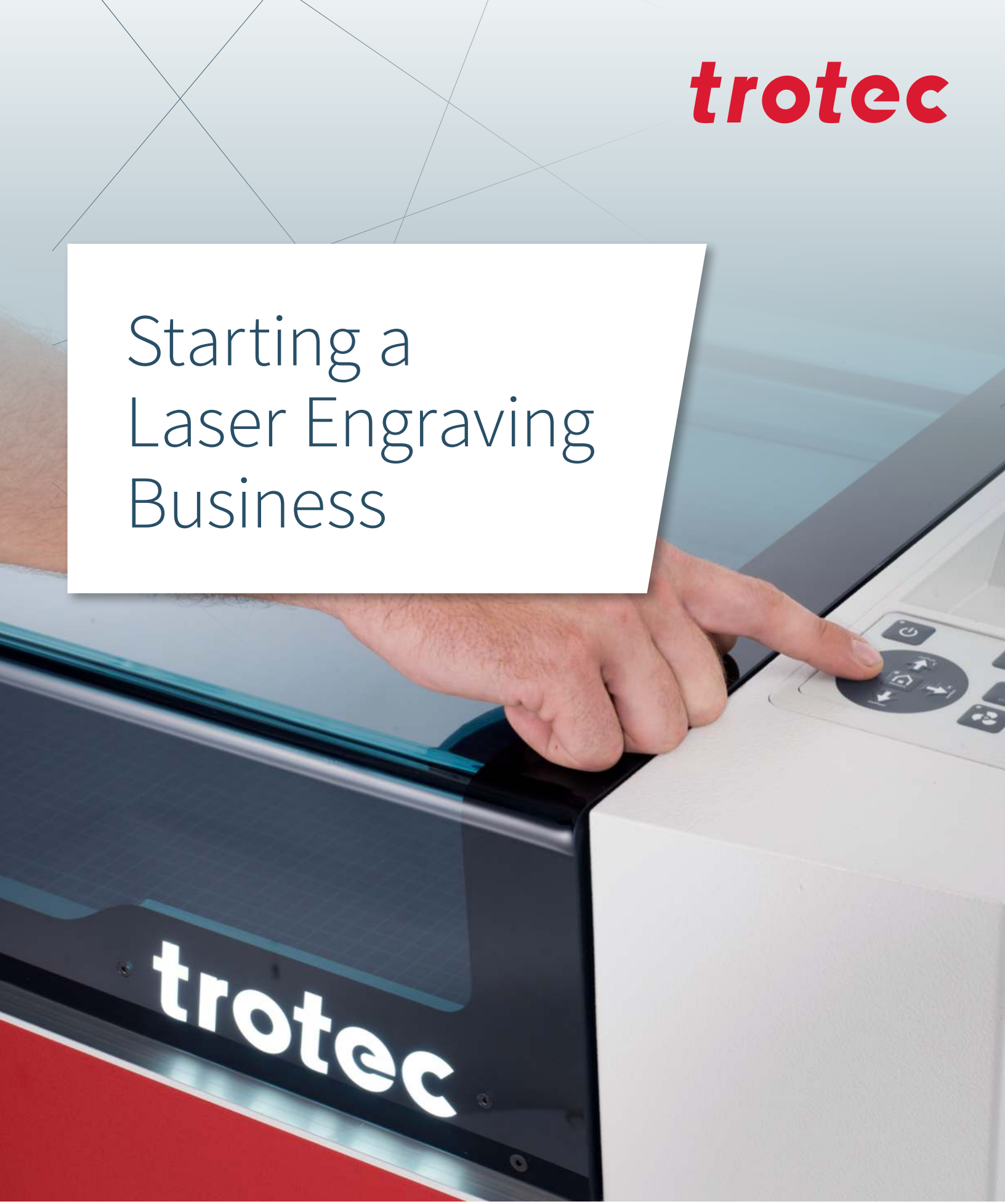
trotec

Starting a Laser Engraving Business



SETTING NEW STANDARDS

1. Considering a Laser Engraving Business

2. How to Generate Revenue with a Laser

3. Launch Your Own Laser Engraving Business in Six Steps

4. Getting Started

1 / Considering a Laser Engraving Business

1.1. Is a laser engraving business right for me?

With the increased availability of user-friendly laser systems, people all over the world have transformed their simple idea or hobby into a successful business. In fact, many entrepreneurs run their businesses from the comfort of their homes. If you have an appreciation for craftsmanship, enjoy working with a broad range of clients, or feel empowered by the idea of being your own boss, starting your own laser engraving business is worth pursuing.

However, building your own business is no simple feat. A great deal of planning is required before you'll be ready to open shop. To help you in those important first steps, we here at Trotec developed this guide to starting your own laser engraving business. It includes the basics of professional laser engraving, developing a business plan, and strategies for generating an income.

We hope you find this guide helpful, and we wish you all the best in your new journey!

1.2. What products do you want to offer?

Laser engraving is used to give products an individual design or a personal touch. A sports trophy engraved with the name of the winner, ballpoint pens engraved with the company logo or typeplates with serial numbers – these are typical examples for laser engraving. The big advantage: With a laser, you can engrave virtually any design on many materials. Single pieces, small batches and large series can be produced inexpensively with a laser machine.

There are plenty of revenue generation opportunities available to laser engravers. A laser system enables you to engrave nearly any design on a variety of materials. A few common products offered by laser engravers are:

- Personalized trophies and awards
- Pens etched with a company's logo
- Data plates marked with serial numbers

Depending on the size of a given workpiece, dozens or even hundreds of units can be processed in a single batch. As a result, you can significantly reduce the time taken to complete an order.

Product Examples…

Trophy personalized with name of winner


Pens engraved with company logo


Anodized aluminum data plates


Glasses engraved with company logos

Product Examples…

Wooden cellphone case with detailed engravings

Personalized pendant

Coated metal locks engraved with names

Interior and exterior signage

Laser cut and engraved stamp plates

Laser cut and engraved greeting cards

Custom artwork engraved on leather

Detailed photo engraving on acrylic

1.3. Which materials can a laser engrave and cut?

You can engrave, cut and/or mark a broad range of materials with a laser – woods, rubbers, leathers, metals, plastics and fabrics, just to name a few.

The table below details the material processing capabilities of Trotec laser cutters and engravers. The list of materials is organized according to the specific process (cutting, engraving, marking).

A single Trotec laser can both engrave as well as cut materials. However, depending on its main use, it is commonly referred to as either a laser cutter or a laser engraver. If your laser is mostly used to cut materials, it is usually called a laser cutter. If the laser is mostly used for engraving purposes, on the other hand, it is typically called a laser engraver.

A world full of materials is waiting…

List of Engraving Materials

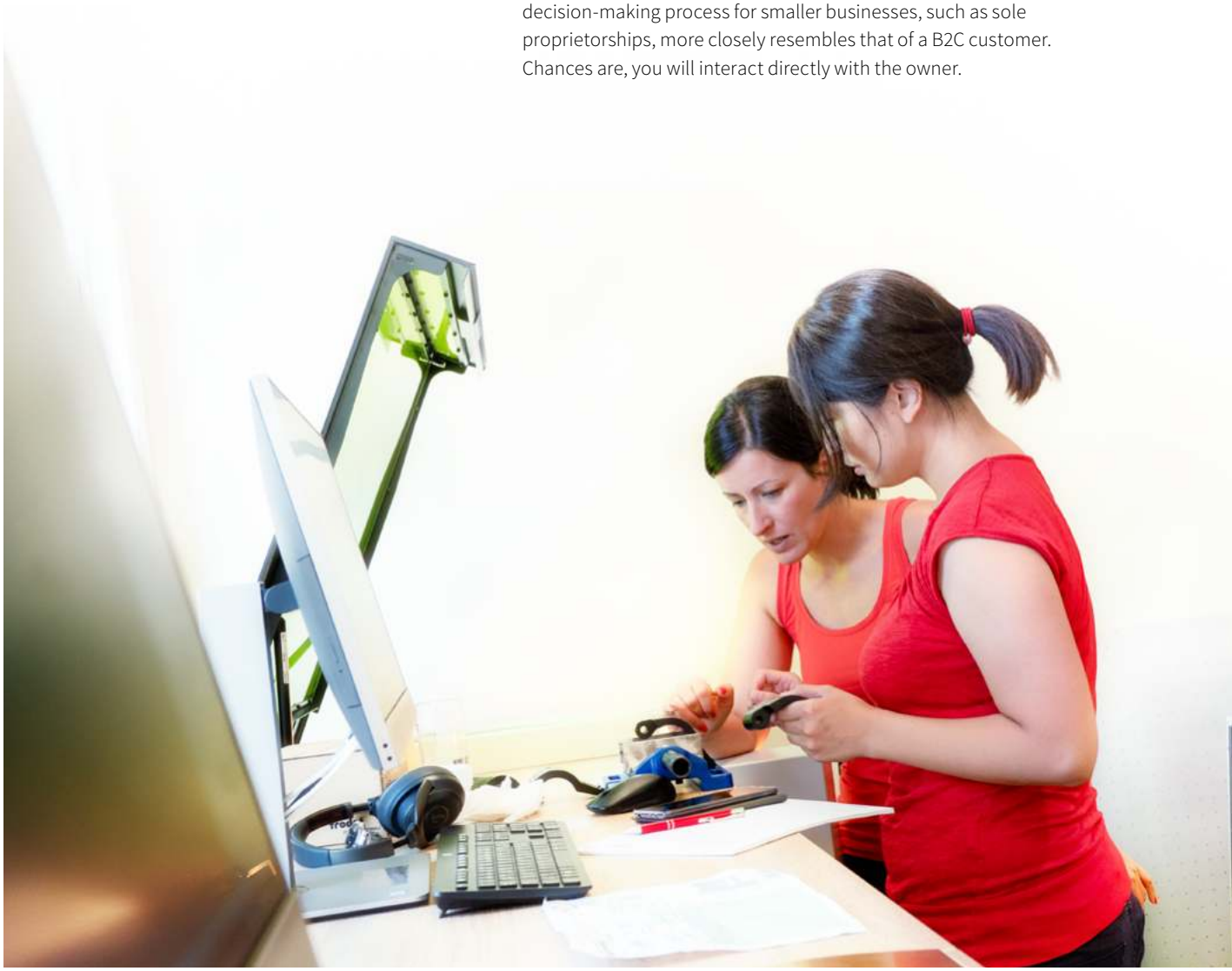
Material	Cutting	Engraving	Marking
Wood	●	●	
Mirror		●	●
Stone		●	
Paper (white)	●	●	●
Paper (colored)	●	●	●
Food	●	●	●
Leather	●	●	●
Fabric	●	●	
Glass		●	
Ceramics		●	●
Cardboard	●	●	●
Cork	●	●	●
Metal			
Aluminum			
Aluminum, anodized		●	●
Chromium		●	●
Precious metal		●	●
Metal foils up to 0.5.mm (Aluminum, Brass, Copper, precious metal)	●	●	●
Stainless steel		●	●
Metal, painted		●	
Brass		●	●
Copper		●	●
Titanium		●	●
Plastic			
Acrylonittrile butadiene styrene (ABS)	●	●	●
Acrylic/PMMA, i.e. Plexiglas®	●	●	●
Rubber	●	●	
Polyamide (PA)	●	●	●
Polybutylene terephthalate (PBT)	●	●	●
Polycarbonate (PC)	●	●	●
Polyethylene (PE)	●	●	●
Polyester (PES)	●	●	●
Polyethylene terephthalate (PET)	●	●	●
Polymide (PI)	●	●	●
Polyoxymethylene (POM) – i.e. Delrin®	●	●	●
Polypropylene (PP)	●	●	●
Polyphenyiene sulfide (PPS)	●	●	●
Polystyrene (PUR)	●	●	●
Foam (PVBC free)	●	●	●

1.4. Which customers do you want to target?

As you may infer from the application potential presented above, there are many types of customer groups that a professional laser engraver can serve. From hotels to manufacturing plants to private individuals, each client type has a unique set of needs. One important decision you will need to make is which group(s) you'd like to gear your efforts towards. Two general transaction types are business-to-business (B2B) and business-to-consumer (B2C). The former refers to selling products or services to another business. The term B2C, on the other hand, typically describes selling products directly to private individuals. Generally speaking, the B2B and B2C decision-making processes and order requirements are distinct.

When it comes to B2C transactions, the purchase process is relatively short and straightforward. In most cases, the customer you communicate with is the decision-maker. Typically, B2C customers wish to purchase customized items for their own use or as gifts for others. For instance, one client may wish to engrave a silver pendant for her friend's birthday, and another customer may contact you to engrave their leather wallet. Although the sheer number of B2C customers is a big plus, order quantities tend to be low and repeat orders are somewhat uncommon.

In contrast, high product volumes and repeat orders are far more common when serving B2B customers. However, the B2B buying process tends to be more complex. Depending on the order quantity and size of the company, decision-making groups can include personnel from multiple departments. However, the decision-making process for smaller businesses, such as sole proprietorships, more closely resembles that of a B2C customer. Chances are, you will interact directly with the owner.



1.5. Business Models

With regards to generating an income, it is important to define what kinds of services you want to offer to your customers as a laser engraver. This decision has an impact on your pricing, sourcing of laser materials, and on the equipment you will need. First you could opt to solely provide laser engraving services. Second, you could offer your customers turnkey solutions. Third, you could take a blended approach and provide both laser engraving and turnkey services.

What laser services do you want to offer to your customers? Laser engraving only, turnkey solutions or a blended approach?

Laser Processing Only

In this scenario, your customers would supply their own workpieces, which you would then laser process according to their requirements. For instance, customers might bring you their own jewelry pieces or favorite coffee tumblers to engrave with inscriptions. It's important to be extremely careful with these orders, as there are no re-dos! Your customers'workpieces can be one-of-a kind pieces with great sentimental value.

Turnkey Solutions

By offering turnkey solutions, you would source and laser process generic items and materials. You would then deliver the finished products to your customers.

Laser engravers in the awards and promotional product industries are examples of businesses offering this type of service. For example, consider a local sports club in need of participant trophies for a summer tournament. The client would choose their preferred trophy model from your catalog, the number of units wish to purchase, as well as the design or wording they wish to have engraved on each item. Once their order is placed, you would engrave the trophy with your laser, and then ship the finished products to the sports club.

Turnkey engravers often times fulfill large orders, which can be conveniently produced with the use of jigs. Depending on their sizes, dozens or hundreds of workpieces can be engraved in a single batch. This technique significantly reduces the time taken to properly position each individual object on the laser's work area. As a result, you can complete each order far more quickly.

JobControl® has multiple features that allow users to streamline production cycles using their Speedy laser systems. For instance, users can add jigs to their design template libraries in JobControl® and simply select the jig they wish to use when it's needed.
In contrast to purchasing generic items to laser engrave and resell to customers, you could also make your own custom creations. Afterwards, these items could be personalized in accordance with your client's preferences. Although this option is comparatively labor-intensive, you could achieve higher unit revenues, as these products are unique in their design.

Blended Approach

Lastly, you could provide clients both turnkey services and the option of bringing their own workpieces to laser process. By taking a blended approach, a laser engraver casts the widest possible net by not limiting their potential business. For instance, they need not turn away an individual looking to engrave a family heirloom because they only engrave the object they provide. They also aren't refusing orders from potential customers who do not have the time or knowledge to supply their own products to customize.

1.6 What are the advantages of laser technology?

One Tool for Many Materials

A single laser system is capable of engraving a countless number of materials without the need for finishing equipment. Plastics, wood, glass, MDF, acrylic, textiles, cardboard, paper, foils, metals are just a few examples.

Contactless Material Processing

At multiple points during a job, traditional rotary engravers make direct contact with a workpiece. First, the object must be secured to the engraving mat. Then, a rotary bit is used to drill a design onto the workpiece. Over time, components such as clamps, engraving mats, and drill bits wear out and must be replaced. This is not the case with laser technology, as a workpiece can be simply placed on a laser's work area.

Scalable Processing

Whether you're working on one product, a small batch, or a large order, a Trotec laser system is designed with a broad range of features to adapt to your workload. Its components are specifically developed and tested to perform and last, even under frequent use.

Design Flexibility

Unlike traditional engravers, a laser system can create highly intricate details. In addition, contours that are a fraction of a millimeter in width can be formed on your workpieces. It is rarely feasible to achieve this degree of precision with a mechanical engraver, as even the smallest bit needed to make a fine etching is thick in comparison.

Top Processing Speeds

Laser technology saves users time during the preparation, processing, and post-processing stages. With regards to engraving, Trotec's Speedy 400 laser system has a maximum 170in./s engraving speed, which is the fastest of any laser engraver in its class.

Permanent Results

In comparison to other labeling methods, laser engraving generally does not involve the use of inks or other chemical compounds. Instead, during the laser engraving process, the laser beam is focused on the material's surface, exposing it to a great deal of heat. Depending on the exposure time, power level, and characteristics of your workpiece, this process results in the material evaporating, burning, melting, or changing color. The engraving is, in most cases, resistant to abrasion and chemical corrosion.

1.7 How easy is laser engraving?

Layout Design | Laser | Finished Product

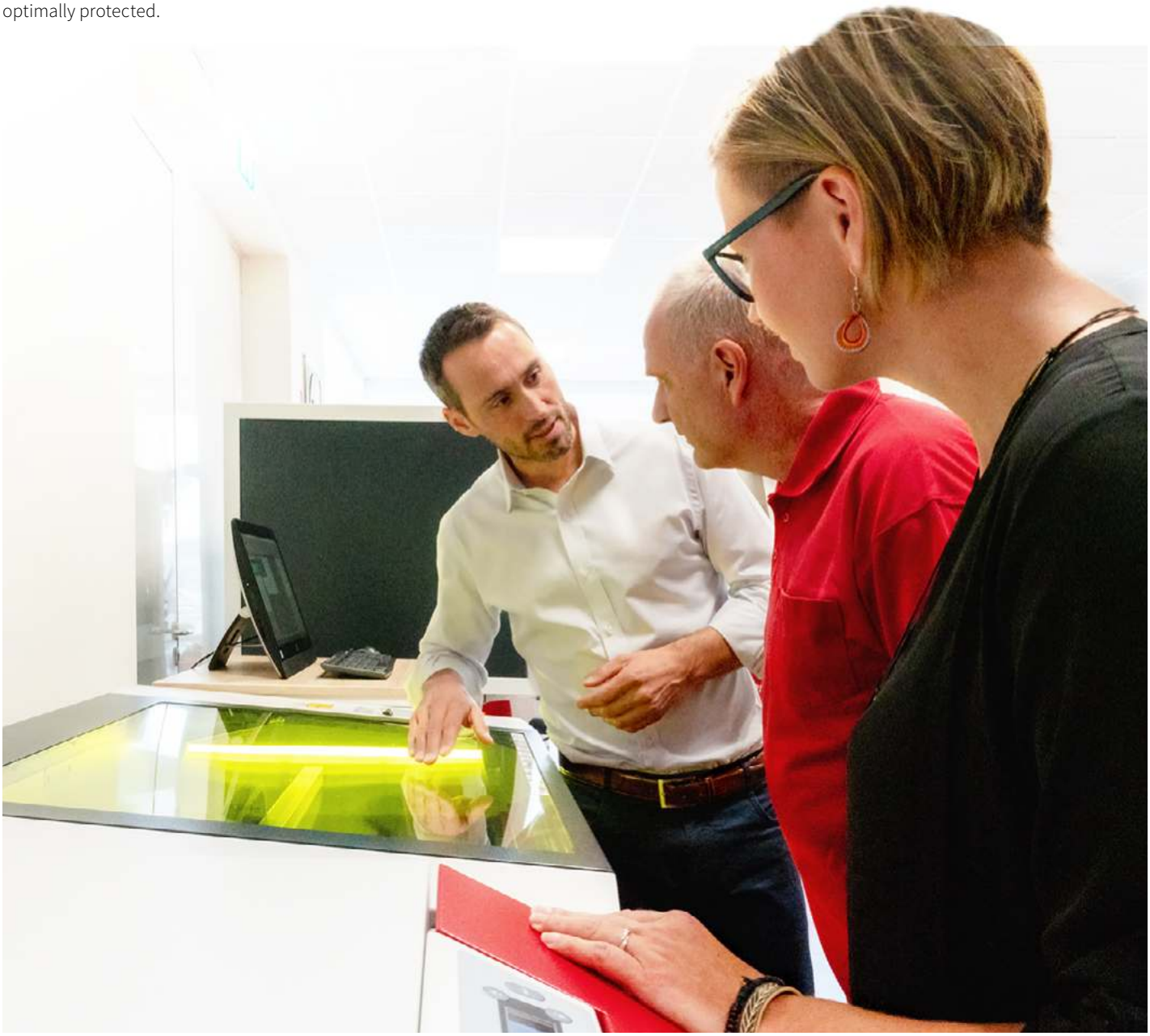
Laser engraving is as simple as printing. First, create your design on a graphic design program. Next, send the finalized artwork to your laser via your computer's printer driver. This action will transfer your file to JobControl® where you can optimize your laser processing settings.

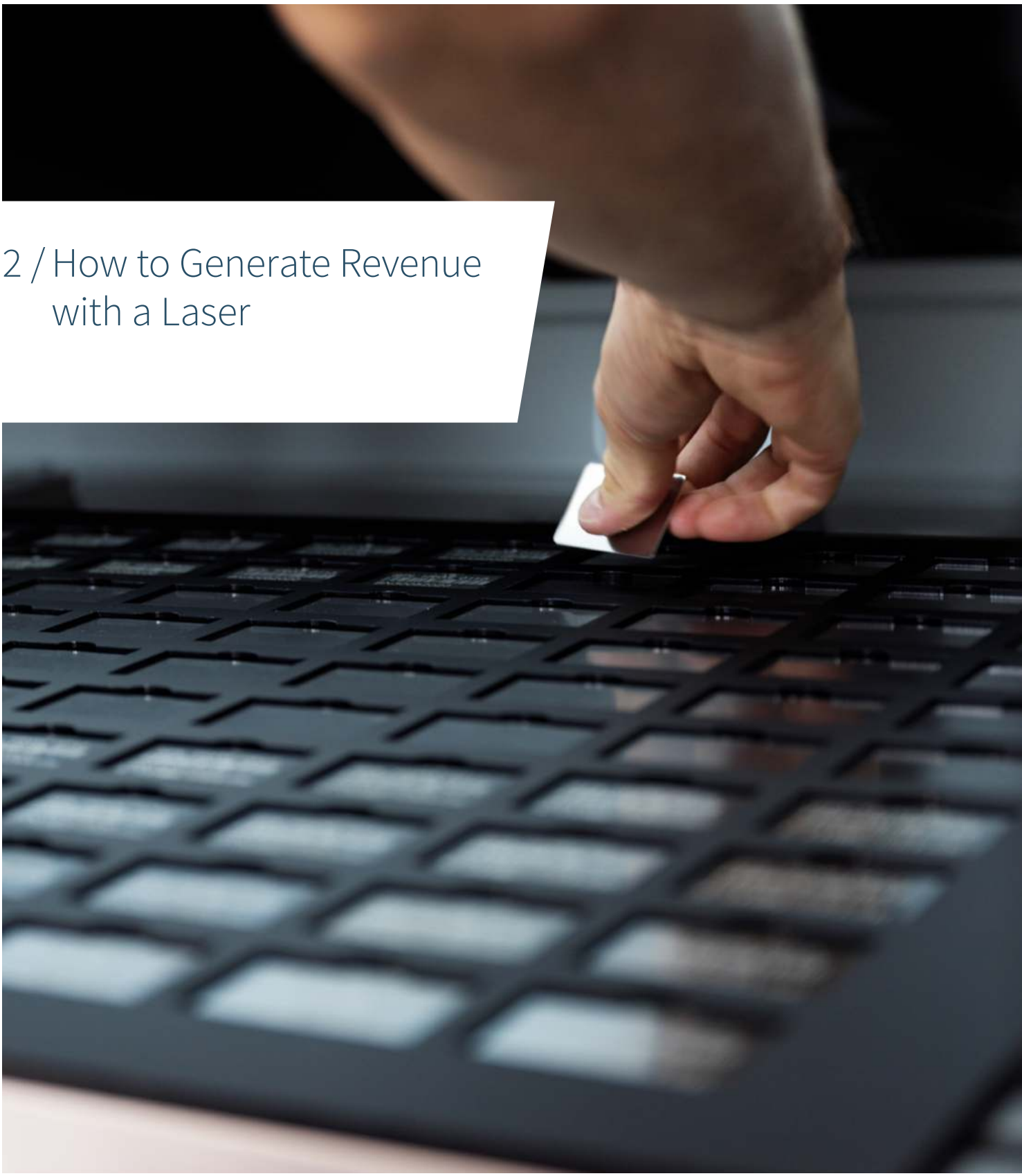
Trotec tested more than 50 materials and stored the recommended settings within JobControl®. You can select the recommended settings from this library, or you can enter your own custom ones. JobControl® also has multiple positioning features that you can use to properly position the engraving.
All that's left at this point is to send the job to your Speedy system. That's all there is to it!

1.8. How safe is laser engraving?

Laser machines are categorized into four internationally recognized classes based on their performance and the risk of injury to the operator. Class 1 lasers are the least hazardous, while Class 4 lasers pose the highest risk. Trotec Speedy laser systems belong to Class 2 because, among other factors, the laser beam's path is completely enclosed and laser pointers are built into the laser head to show the user where the laser beam is focused on the material. According to international standards, laser pointers with an output of less than one milliwatt belong to Class 2. By means of the closed design of Trotec's Speedy systems, the laser user is optimally protected.

All Trotec laser machines are CE-compliant, and thus meet the EC Machinery Directive 2006/42/EC health and safety requirements. In addition, Trotec has developed specific safety and protection features for its systems, such as interlock safety switches, protective covers, and temperature sensors with warning signals.





2 / How to Generate Revenue with a Laser

Revenue is fundamental to the longevity of any business, regardless of where it is located and what it sells its customers. Each laser engraving business operates in a different context and there are no standard rules for how to best generate revenue. However, that being stated, there are a few common services that you should consider for your own business: graphic design, material sourcing, and — of course — laser processing.

2.1 Graphic Design

A customer may contact you with a general idea of what type of design they would like to have engraved, but they may have neither the time nor skills to produce the artwork. This gap affords you opportunity to offer your graphic design expertise. It is commonplace to bill graphic design services by the hour, as the complexity of each design varies. However, for simple artwork (e.g., adding standard text), you may wish to charge a flat fee.

It is also standard procedure to submit a completed design file for approval by a customer (this type of file is also known as a "proof"). If they are not satisfied with your work, they may ask you to make some edits. To prevent a time-consuming, back-and-forth situation where a customer consistently wants you to edit your proofs, you may want to think about limiting the number of free edited file submissions to 2 or 3. Beyond those 2 or 3 edits, you might want to consider charging the customer a flat or hourly fee.

2.2 Sourcing Materials and Generic Products

If you take either a turnkey or blended approach to your business, you will need to source materials and products to personalize for your customers. You can add a markup to each of the products you procure and proceed to sell to your customers. After all, the time you took to inspect, select, and secure those items shouldn't be free!

Depending on the specific vendor and product, you can attain or negotiate volume discounts if you purchase relatively large quantities. If your client orders a high volume of customized products, you could also offer them a volume discount. This practice, along with minimum necessary order quantities, is standard practice among promotional product engravers who target B2B customers.

2.3 Price premiums for laser engraving

End consumers are generally willing to pay higher prices for products with a personal touch.

> The price for items with an individual laser engraving is therefore often determined by the price per product achievable on the market. It is common for end users to pay 5 to 10 times the generic product price for a personalized version.

Example: Laser-engraved ballpoint pen with customization surcharge

High-quality ballpoint pens with personalized engravings sell for an average of $17 per unit. Depending on the order quantity, these pens can be purchased for as little as $1.80 per unit. In the laser industry, the typical per minute cost of running a laser is $1.20. In the case of the ballpoint pens in this example, it takes 15 seconds to engrave a single pen.

Therefore, each unit has a cost of 30 cents. As the table below highlights, even after taking labor costs into consideration, laser engraving an order of 150 ballpoint pens can yield substantial profits.

Material	1 unit	150 units
Purchase price of a ballpoint pen	$ 1.80	$ 270
Engraving duration for 1 unit	15 seconds	15 min
Engraving costs ($1.20/min)	$ 0.30	$ 45
Labor cost ($47.44/hour)	$ 0.13	$ 19.50
Retail price with engraving per order at 1 unit	$ 17.80	$ 2,670
Profit	**$15.57 / unit**	**$ 2,335.0 / order at 150 units**

2.4. The most popular laser-engraved products

There are a seemingly endless number of products that can be laser engraved for customers. Among the most popular items requested are picture frames, wine glasses, ballpoint pens, and decorative signs.

Similarly to the average consumer, there are a broad array of items that businesses and organizations can order from laser engravers. One popular product category is custom office and building supplies, which includes items such as stamps and signage. Business-to-business (B2B) customers also typically request trophies and medals to reward exceptional employees and contest winners. In addition, machine and automotive manufacturers will often subcontract data plate and part marking orders.

Trophy with personal dedication

Champagne glasses with name

Laser-engraved door signs

Personalized picture frame

2.5. Custom pieces increase profit margins

In addition to sourcing and personalizing products such as insulated bottles and pens, you can also produce your own custom creations. Common examples are jewelry pieces, artwork, and decorative furnishings. As these items are unique in that they cannot be purchased from another vendor, you can establish higher sales prices.

As a Trotec laser system allows you to achieve a high degree of precision, you can engrave complex designs with great amounts of detail. In other words, you can produce nearly any design you wish on your workpieces. Due to a Trotec laser's speed and user-friendliness, you can create your works efficiently without a great deal of effort.

Laser-engraved violin

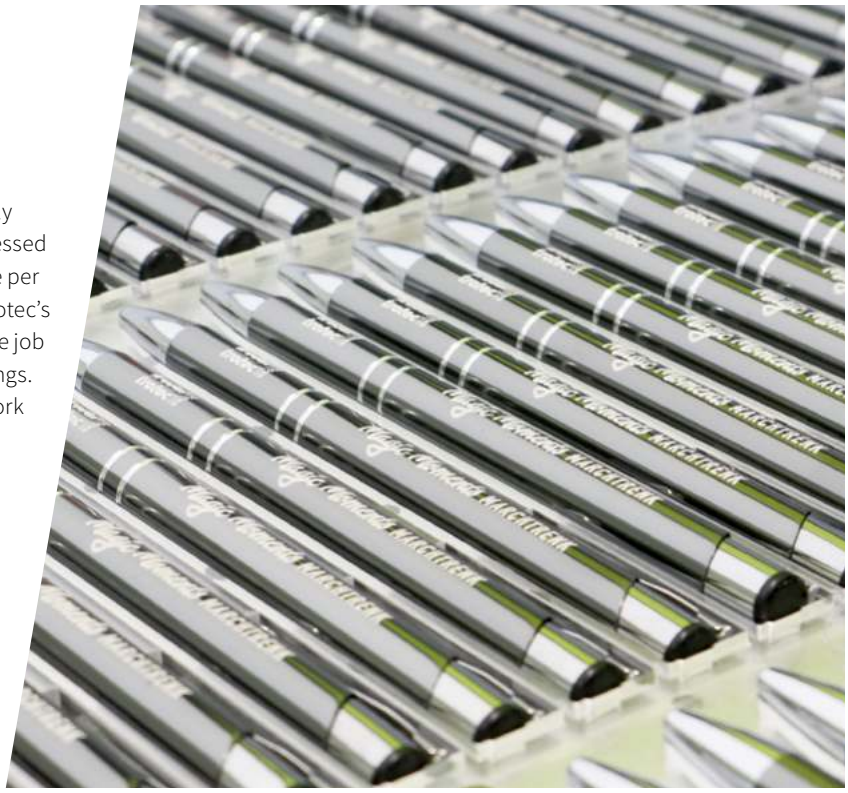
Laser-cut wooden lamp

Laser-cut image on paper

Customized leather book

High-volume customization

Larger orders of personalized items can also be economically produced using a laser, as multiple workpieces can be processed in a single batch. This permits you to significantly reduce the per unit production cost, and by extension, maximize profits. Trotec's proprietary JobControl® laser software allows users to create job templates for repeat jobs, which allows for further time savings. Moreover, templates can be adapted to any Trotec laser's work area.



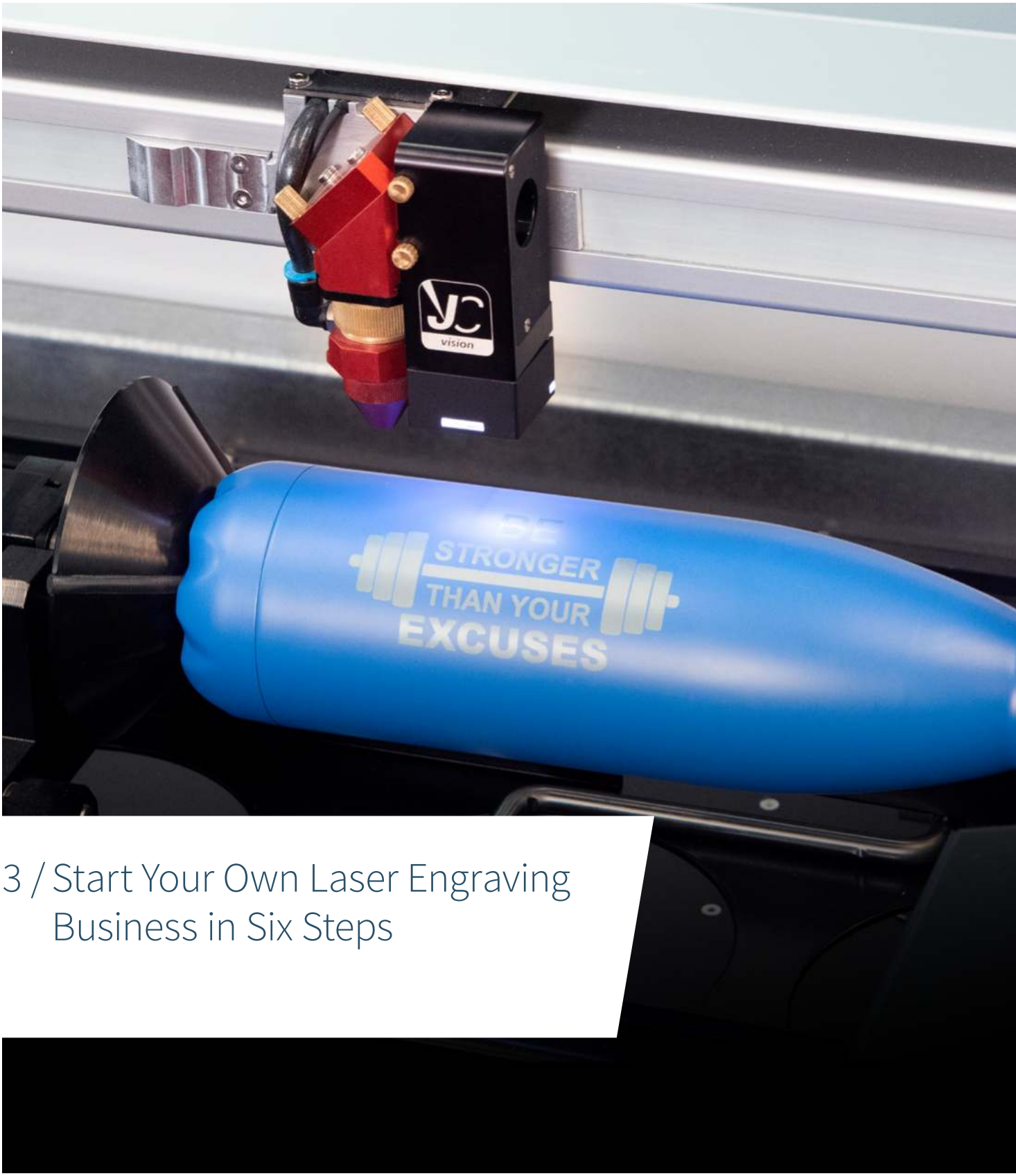
Let us return to the above personalized ballpoint pen example. Engraving a single pen takes approximately 15 seconds. By using a template configured in JobControl® for the entire Trotec laser's work area, you can engrave all 150 pens in only 15 minutes.

Specialization vs. general engraving

A variety of materials can be processed with a laser and thus many customer requests can be realized. To begin with, a wide range of laser-engraved products is certainly a great way to find out which items appeal to the market and which products can be used to earn good money. Whether a specialization in certain products and materials takes place over time or a deliberately broad portfolio is offered is a strategic decision for every company. This decision is significantly influenced by the competitive situation in the region in which you operate: Are you the sole provider of laser services? Or is there already a specialist? For example, are glass engraving or wedding decorations sold around the corner?

As an entrepreneur, you should carefully consider your business model and weigh its advantages and disadvantages. With regards to specialization, you process similar applications and you develop methods to optimize the quality of the results, as well as minimize the time taken to set up and complete each job. In doing this, a laser engraver who specializes in a particular field of laser engraving, whether it be a technique or material, can maximize profits.

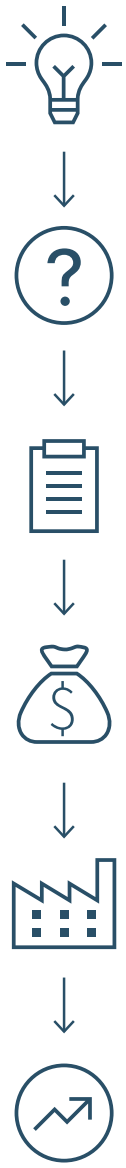
On the other hand, you may generate a larger number of transactions by opting not to specialize. Instead, you can offer your customers to select from a wider selection of products to personalize.



3 / Start Your Own Laser Engraving Business in Six Steps

This is it! Now that you have some background information about what professional laser engraving entails, you're ready to get down to business.

There are six general steps we recommend taking to get started on this new chapter of your career:



1. Refine your business idea
2. Evaluate your entrepreneurial traits
3. Write a business plan
4. Secure financing
5. Establish your business
6. Market(ing) and grow your business

3.1. Step 1 / Refine your business idea

If you're thinking about starting a business, you likely already have an idea of what you want to sell, or at least the types of customers you'd like to serve. Do a quick search for existing companies in your chosen industry. Learn what similar companies are doing and think about how you can offer even greater value to potential customers. If you think your business can deliver something other companies don't — or deliver the same products, but more quickly or at a lower price — you've got a solid idea and are ready to create a business plan!

3.2. Step 2 / Evaluate your entrepreneurial traits

The ideal entrepreneur personality does not exist. However, some business experts have identified a few key characteristics are conducive to a business founder's success:

1. Passion
For obvious reasons, this is an entrepreneur's most important asset. Simply put, they are successful because they love what they do. These entrepreneurs put all the extra hours they have into the business to make it flourish.

2. Creativity
Creativity involves being able to make connections between seemingly unrelated events or situations. Entrepreneurs often develop solutions which combine existing pieces of information. With regards to their business, they often will devise new ways to using existing products, and subsequently market them to new customer groups.

3. Perseverance
It is critical for entrepreneurs to be able to overcome obstacles. A business does not get built overnight, and turning an idea into reality takes plenty of time and effort. Furthermore, it is common for prospective investors and clients to reject a new business's sales pitch. No matter how many doors are shut, an entrepreneur must keep knocking!

4. Resourcefulness
Especially in cases where resources are limited, an entrepreneur must be capable of making the most of what they have. A particularly important resource is one's network because leveraging even a few connections can go a long way. For instance, many successful entrepreneurs identify and pursue partnership opportunities with other business owners in their networks.

5. Open-Mindedness
As an entrepreneur, you may think you've zeroed in on the perfect business plan, but it is important to take a few steps back and solicit feedback from your peers and colleagues. They may discover critical issues that may impede the viability of your business. As serial entrepreneur and investor Mark Cuban once said, "Follow the green, not the dream." If your dream startup isn't likely to turn a profit, you may need to make some major revisions to your plan.

3.3. Step 3 / Write a business plan

The next step in turning your business idea into reality is to create a business plan. This document will serve as a roadmap for starting, establishing, and growing your business.

A business plan allows you to justify to yourself and others that your idea is feasible and worth pursuing. Creating a business plan will also enable you to seek funding from investors and financial institutions.

At the very least, your business plan should answer the following questions:

- What purpose does your business serve?
- Who are your customers?
- What problems are solved by your products or services?
- Who are your competitors?
- How are you going to position, price, and market your products or services?

Apart from answers to the above questions, we encourage you to include any other details you deem relevant.

3.4. Step 4 / Secure financing

Starting a small business doesn't necessarily require a large amount of capital. However, it will involve an initial investment, as well as the funds to cover ongoing expenses before you achieve profitability. Create a spreadsheet that estimates the one-time startup costs for your business. The following are a few examples of expenses you might want to include:

- Licenses and permits
- Equipment
- Legal fees
- Business insurance
- Branding
- Market research
- Inventory
- Grand opening event(s)
- Property lease(s)

It is also recommended that you consider the funds you will need to keep your business running for at least 12 months. This figure may include costs such as:

- Rent
- Utilities
- Marketing materials
- Production
- Supplies
- Travel expenses
- Employee salaries
- Your own salary

The initial investment you will need to launch your business is the sum of all expenses in both cost categories (i.e., the costs you will incur to start up your business, as well as the expenses required to keep your business functioning for 12 months).

Trotec financing options

Purchasing a laser is usually a well-planned investment. Trotec offers support for financing your new laser machine with a variety of payment models, such as deferred payments for established businesses and special options for start-ups, including an exclusive equipment rental program. With these options you can start using your laser immediately to fulfill customer orders and allow your laser to pay for itself.

Contact us for additional financing information or for a complementary financing consultation that is unique to your business plan and needs.

3.5. Step 5 / Establish your business

Registering your business is the first step toward making it real. However, as with the personal evaluation step, take your time to get to know the pros and cons of different business formations.

If at all possible, work with an attorney to iron out the details. This is not an area you want to leave to chance. You will also need to get all mandatory licenses and permits. Depending on the nature of your business, there may be local, regional, or national regulations with which you must comply. This is also the time to check into insurance and to find a good accountant.

3.6. Step 6 / Market(ing) and grow your business

How can marketing help you to make more money from your range of products or services? In a nutshell, you must offer the right product or service at the right price at the right place at the right time.

The 4Ps of marketing is a model for enhancing the components of your "marketing mix" – the ways in which you take a new product or service to market.

This model can help you to define your marketing options with regards to:

- Product
- Price
- Place
- Promotion

The ultimate objective of the 4Ps is to ensure that your offering meets a specific customer need or demand.

Marketing Mix

To get started, identify the product or service you want to analyze.
Then, work your way through the questions below to define your marketing mix.

Product	Which of your potential customers' needs will your product or service satisfy?
	What features does your product or service need to be able to satisfy these needs?
	Which features are missing?
	What features do you provide that your customer does not need or is not prepared to pay for?
	Does your product's appearance look appealing to customers?
	Does your product/service differentiate itself from that of the competition?
Price	Does the market already have specific price points?
	What discounts are common in your industry?
	How is your product positioned compared to that of your direct competition?
	How might your existing and potential customers react to a price increase or decrease?
	What added value will your product or service provide to your customer?

Place	How can customers buy your products and services? Online, in-person, or both?
	Are there any public events, festivals, or trade shows in your area where you can promote your products?
	How do your competitors promote and advertise themselves?
Promotion	What are the channels you can use to reach potential customers? Online or networking at special events?
	Are there any trade associations or local business groups you could join?
	How do your competitors communicate with their customers? Is there anything you can do better to differentiate yourself?
	Are there specific points in time (e.g., holidays) during which it would be best to promote your products and services?

We discuss a few core marketing mix topics in detail below.

How to establish a price list

There is no standard rule for setting prices for your products or services. No two engravers will follow the exact same procedure and obtain the same results. It's important to remember that it is market forces, and not your costs that will determine the price of your products and services (although cost must be considered in any pricing plan). The laws of supply and demand will determine the prices you can reasonably charge, and to be successful you need to play by the rules of the game.

It is not unusual for a personalized product to be sold for 5-10 times the price of its generic counterpart that does not have an engraving. For example, it's feasible to buy a "material blank" for $2.40, engrave someone's name on it, and then sell it for $11.90.

Before a retail price can be established, there are a few points that must be taken into consideration. First, you must determine whether you want to maximize your total sales or your total profits. Having high volumes with little return on each transaction may not be financially sustainable. Maximizing your return on a few large transactions may be a better strategy. It's not how much you earn that's important, but how much you keep that truly matters in the long term.

On the surface, engraving appears to be just a product. Many engravers only consider their material costs and overhead expenses when calculating prices. They forget that their expertise and artistic skill also has value, and it is what sets them apart from the competition.

With regards to laser engraving, the objective of pricing is to make a reasonable profit on all engraving activities. The question you must ask yourself is: "Which pricing method should I apply to best meet this objective?"

Price = Cost + Fair Profit

There are three significant cost factors to take into account:

- Labor
- Cost of materials
- Operating expenses ("overhead"): costs of running your operation (e.g., utilities, administrative, insurance)

There are two types of overhead costs:

- Fixed expenses: do not change from month to month: (e.g., rent, business insurance, engraving equipment lease payments, trash collection fees, building security, taxes)
- Variable expenses: seasonal or unpredictable in nature: (e.g., utilities, advertising, equipment maintenance, phone)

Pricing should incorporate your time as well as your artistic efforts. There are several pricing formulas that may help in the beginning to set your prices:

Pricing by the hour
The first step in deciding what hourly rate you should charge your customers, determine the income you wish to generate each year. This figure should exclude all costs. This number should be exclusive of all other costs including expenses and overhead. Once you have determined this number, divide it by the average number of work hours in a year.

Example: Income $88,950.00, divided by 2080 hours = $42.76 per hour.
The hourly rate should be incorporated into any service you perform or product you create. You would also add the material and overhead costs for that particular job to arrive at the final price to bill your client.

To continue with the above example, if you applied two hours to a project, you would add $85.52 to the costs to cover your time and desired profit margin.

Pricing by the Letter
This text engraving method has its origins in the early years of manual engraving. You simply count the number of characters you engrave on an object. Pricing typically ranges from 8.90 – 50 cents per character.

Markup method
The markup percent method is used to achieve a desired profit, which is expressed as a percentage of gross sales. If your goal is to reach an average margin of 40% on sales, then this formula will help you establish a minimum retail price. Again, your cost should include material, freight and overhead expenses.

Formula

$$\frac{\text{cost}}{100 \text{ mark-up \%}} = ? \times 100 = \text{Retail}$$

Example

$$\frac{\$\ 78.30}{100 - 40\%} = 1.1 \times 100 = \$\ 130$$

Marketing your laser business online

In nearly all cases, a website is the dominant marketing tool for any company. A well-optimized website will generate up to 80% of all inquiries. Additionally, it provides the best bang for your buck, as there are virtually no follow-up costs once your website is live and running. In this section we'll give you a basic overview on how to set up and maintain a well-performing website to promote your business and to generate inquiries.

How to build your website

To set up a state-of-the-art website for a small or medium-sized business, expect to invest $1,185 to $3,558. Depending on your web design experience, we recommend two options:

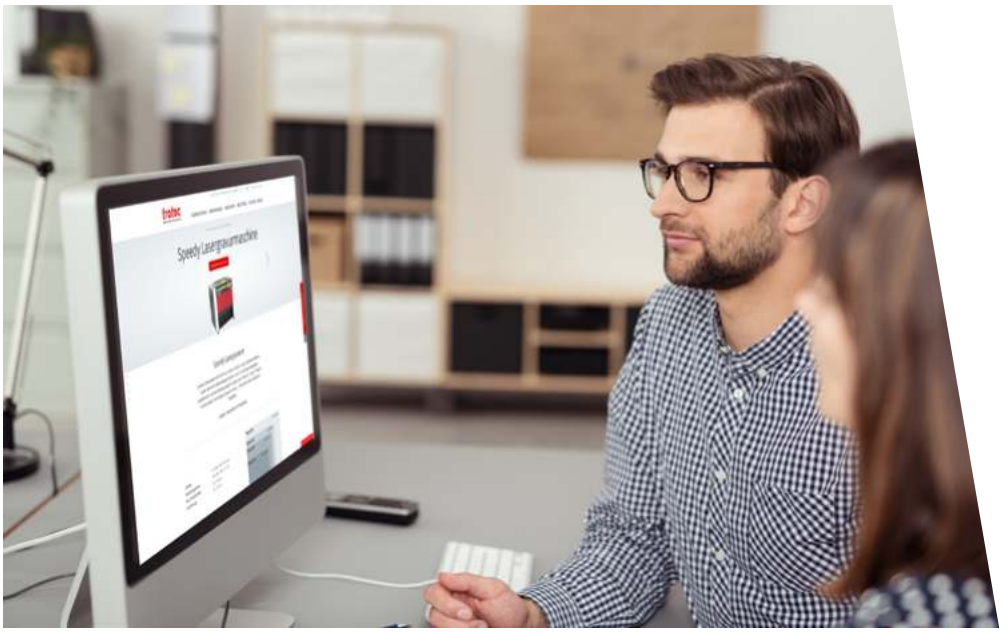
a) Build your own out-of-the box website using a user-friendly platform such as wix.com, squarespace.com or weebly.com. You can pick from hundreds of ready-made designs. Fees are around $23.50 per month.

b) Hire a professional website designer to create your website. You can find hundreds of reputable freelancers on websites such as fiverr.com, upwork.com or freelancer.com. Make sure to agree on a flat-rate fee for the entire project because this option has a far higher price tag.

Costs for a 5 to 25 page website range from $1,185 to $3,558. You should also confirm that you are the owner of your website's domain (e.g. engravingcentral24.com), and that you take over the admin rights for your website as soon as the designer completes the job.

The following are six must-have website components:

- **Home section:** The welcome area for new visitors. Should have a promotional video and shortcuts to order and booking forms. Update regularly with seasonal deals and promotions.
- **Product section:** Show product images, descriptions, prices. Update regularly. Offer seasonal deals. Use long texts and add high-quality images.
- **Services section:** Explain the services you offer. Show your strengths.
- **About section:** Explain who you and your team are. Show photos of your shop or premises (if you have a storefront). Provide details about the history of your business. This creates trust with customers who don't know you yet.
- **Contact section:** Most important part next to the home section. Provide contact form, phone number, e-mail address and a picture of yourself or your team, address and location of your business on a map. Also show your contact details in the website header and footer.
- **Disclaimer and privacy section:** Standard for legal purposes.



SEO – How Google defines who's #1

Search engine optimization (SEO) is the practice of maximizing your website's Google search ranking. Three main factors influence the position of your website listing:

- **Content relevance:** If you want visitors to buy your products, explain how your products are made, which customization services you offer, which sizes and colors are available, etc.
- **Size and freshness of your website:** How many pages and how much text you have on your website, and how often you update it.
- **Page loading speed:** Should be 2 or fewer seconds per page.

Promoting your website

1. Get a Google My Business account to make your business visible on Google Maps. (www.google.com/business). Ask your customers for reviews on Google Maps. This will get other customers to contact you.
2. List your business in other 3rd-party review sites like Yelp, Yellow Pages, Foursquare, Angie's List, or Merchant Circle.
3. Maintain a Facebook account so customers can get in touch with you.

How to select a company name

Finding the right name for your business can have a considerable impact on your success. The wrong name can fail to resonate with customers, and it can lead to business and legal hurdles. In contrast, a clear, strong name can be beneficial to your marketing and branding efforts. Here are some helpful suggestions on how to create a winning name for your business:

Come up with 5 or 10 names that convey meaning

Ask yourself: Can potential customers instantly get what your business is about?

Examine the names' ease of use

Ask yourself: Are these business names short enough for customers to remember?
Are there any punctuation marks in the name that could make it tricky for customers to find me?

Search those names on the Internet

Ask yourself: Is any other business using this name?
Are there any negative connotations of that name present in news articles or on social media (e.g., in hashtags)?

Conduct a trademark search on a government search engine:

Ask yourself: Do any other companies have the same or a similar name?

Reduce and edit your list based on your research

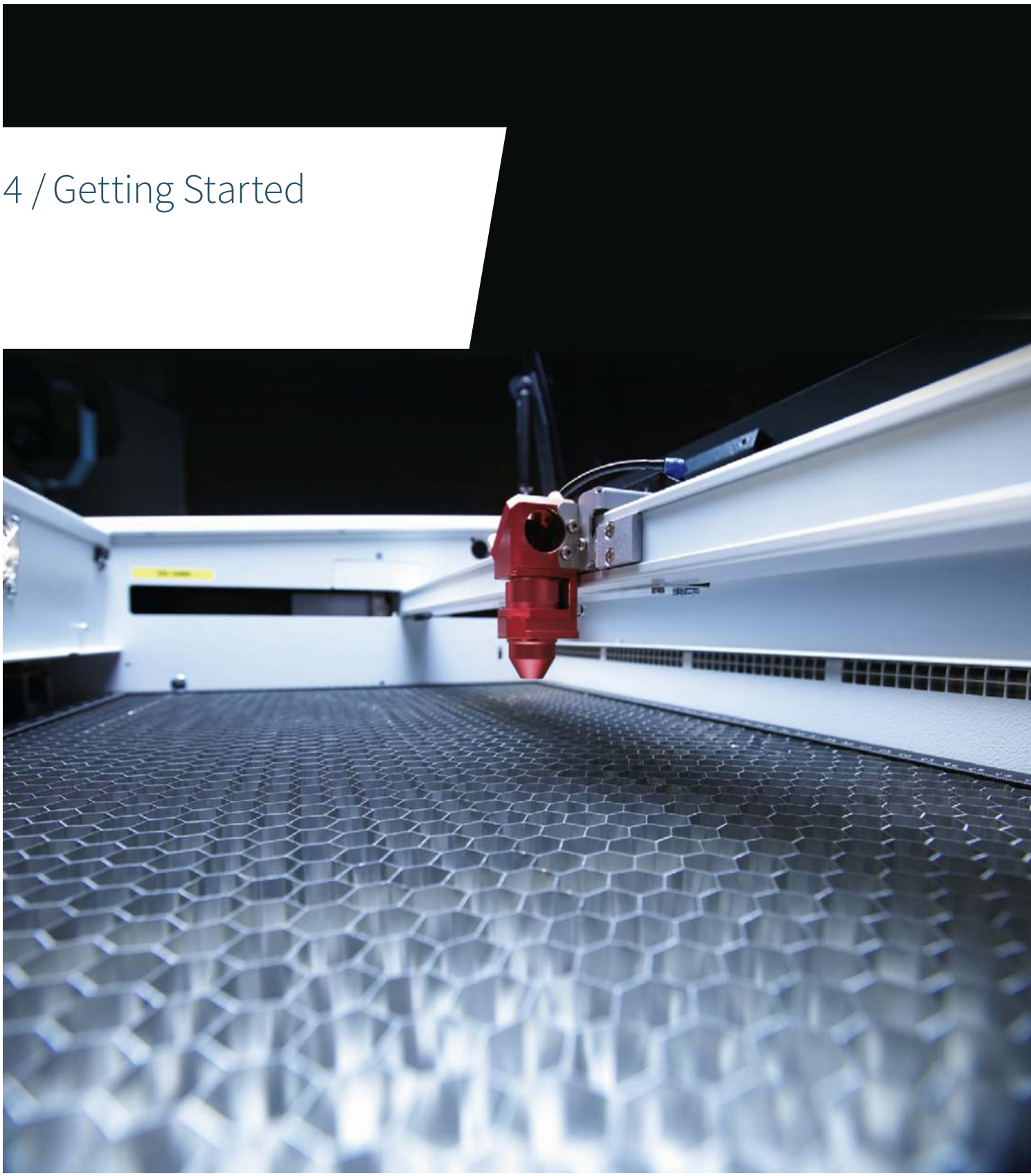
Ask Yourself: Are there any names on my list that wouldn't work?
Are there any names I want to add?

Get your family members' and friends' feedback on the name options

Which names do they like the most, and why?

IMPORTANT! To avoid future issues, we strongly recommend that you seek legal advice regarding formation and name selection prior to establishing your business.

4 / Getting Started



4.1. What do I need to get started?

You only need four pieces of equipment to get your laser engraving business going: a laser engraver, a computer, a graphic design program, as well as an exhaust system.

Laser Engraver
Before you invest in a new laser system, it is worth ensuring that it will meet your specific requirements. We provide further details on this topic in the next chapter.

Computer
A laptop or desktop computer with the following specifications is recommended for a Trotec laser system:

- Windows 8.1® 32/64-bit; Windows 10® 32/64-bit or higher
- 2 GB RAM or greater (Windows 8.1 / 10)
- 80 GB hard drive or larger

Graphics Software
Many popular graphics software, such as Adobe Illustrator, CorelDRAW, AutoCAD, and Inkscape are compatible with a Trotec laser. Both raster- and vector-based files are suitable for laser processing. For laser cutting, however, vector graphics typically offer the best results.

The table below lists popular software packages used to operate our laser machines. Please note that individual programs may have limitations in terms of their laser system compatibility.

Type of Software	Compatible software packages
Illustration	CorelDRAW, Adobe Illustrator, Adobe InDesign, Inkscape
Photo-processing	Corel Photopaint, Adobe Photoshop
PDF	Adobe Acrobat, Adobe Reader
Office software	Microsoft Excel, Microsoft Word
CAD & 3D Design	AutoCAD, Auto CAD LT, Rhino 3D, SolidWorks, DXF Viewer
Specialized software	Gravostyle, Laserstyle, EngraveLab, Bartender

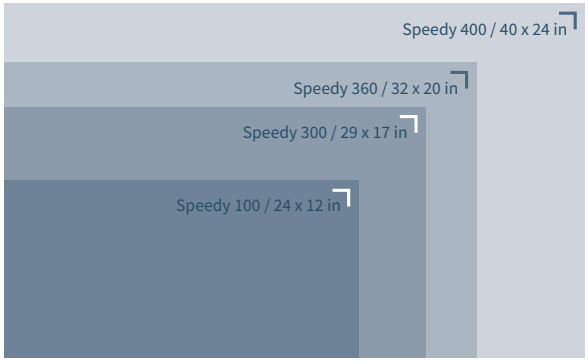
Exhaust System
An exhaust system is key to the the safe and clean operation of your laser system, as it extracts fumes and debris formed during laser processing. Not only does an exhaust system help you maintain a clean work area, but it also protects the laser operator and improves output quality. A standalone exhaust unit should contain multiple filters to trap as much particulate matter as possible. For instance, Atmos systems offered by Trotec are equipped with various filters, including an activated carbon filter which traps odors.

4.2. How do I choose the right laser system?

Picking the right laser system is a critical choice you will need to make, as this piece of equipment will be your moneymaker. When browsing through options available on the market, we recommend taking a close look at the laser type, work area size, wattage, and customer support.

Laser Type
The laser you require is determined by the materials you wish to process. If you want to cut and/or engrave materials such as wood, glass, paper or leather you will need a CO2 laser. For marking metals or plastics, you will need a fiber laser. A Trotec flexx™ system will give you the greatest degree of versatility, as both laser sources are housed in a single machine.

Work Area Size
The largest anticipated size of your workpieces, and the number of units per order, should also be considered. The larger your laser's work area, the more items you'll be able to fit in a single batch. As a result you can shorten the time taken to complete each order, and in turn, increase productivity.



Working areas of the Speedy laser engraver series

Wattage

The most important criterion when selecting the laser power of your laser machine is the application that you want to use most often with the laser. If the laser is primarily used for engraving, you will achieve good results with laser powers between 25 and 80 watts. For laser cutting or for very high speed applications, we recommend a laser power of more than 80 watts. Depending on the type of material, a different laser power will lead to the optimum result. For example, engraving paper usually requires less power than engraving wood. With acrylic, a uniformly homogeneous, not too deep engraving can be created using a low power. And when processing engraving materials (plastic laminates such as TroLase), higher power allows faster work.

The laser power can be easily regulated by the JobControl® laser software. However, the maximum available power output. The following applies: A laser machine with high laser power offers great flexibility as it allows you to process many different materials.

Example: Engraving Anodized Aluminum
An 80-watt laser can complete the job in less than half the time then can a 30-watt. The same ratio applies to other materials such as rubber.

Laser power: 30 watts
Progress: 48% finished
Time per unit: 55 seconds

Laser power: 80 watts
Progress: 100% finished
Time per unit: 55 seconds

Customer Service and Technical Support

The reliability of the laser system is another important criterion for the success of your business. Trotec lasers are used around the world and the field experience of more than 30,000 of installed systems is evidence of expertise and customer confidence. With service and sales organizations in more than 90 countries, Trotec has a professional contact local to you. Maximum reliability and availability should, therefore, always be taken into consideration when making your decision.

Does Trotec sell used lasers?

As Trotec lasers are known for their quality, reliability, and long service life, used models are highly sought after. Trotec does not offer refurbished machines that were previously operated by customers.

Rather, Trotec periodically offers showroom model sales that were previously used by local Trotec associates for tailored, hands-on demonstrations at trade shows and at our showrooms. With our continued innovation and product development, we constantly equip our showrooms with new laser machines, and return the demonstration laser systems to stock. These used laser systems are professionally serviced and maintained by us before they are offered for sale.

4.3. How does a laser work?

Raster and vector are two graphic file types, each of which is best suited to a particular type of laser processing. The main difference between vector and raster graphics is that raster graphics are comprised of pixels, whereas vector graphics consist of paths or lines.

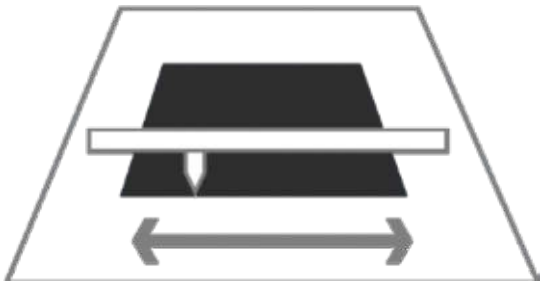
Depending on your particular application and the results you want to achieve, knowing this distinction is important.

Raster files are usually better suited to applications where engraving each pixel is important, such as when you are engraving photos. However, if you want to engrave lines, vector files typically generate cleaner and quicker results. When cutting, only vector files should be used.

A Speedy laser system processes raster and vector files in different manners as outlined in the graphic below.

Process: Raster engraving

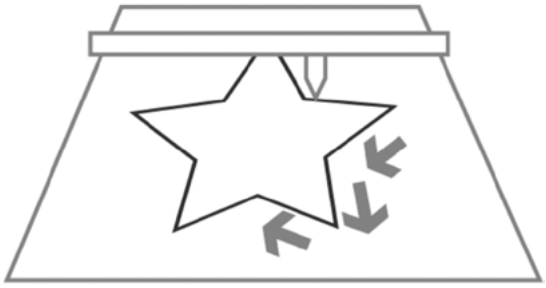
- Similar to a printer
- The laser head moves along on the X-axis from left to right, and back from right to left
- Graphics are engraved or cut row-by-row
- Graphics are rasterized bitmaps
- Key settings are DPI (dots per inch) and PPI (pulses per inch)
- Very fast X-axis, slow Y-axis motion



Raster Engraving

Process: Vector cutting

- The processing head moves along a specific path (vector)
- Cutting paths are vector lines, arcs or beziers
- Vectors are processed one after the other
- Control via speed, power and Hz (frequency)
- “Slower” X-axis and Y-axis movement
- Depending on the laser power set, the material is either cut through or scored out



Vector cutting

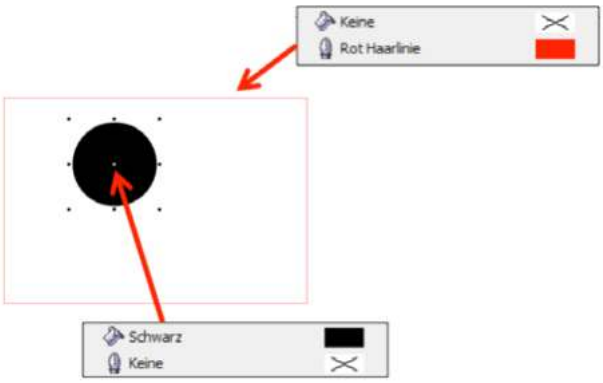
4.4. How can I create a laser file?

In order for the laser to know which lines of the graphics need to be cut and which must be engraved, they must be set in the graphics as follows.

Cutting lines:
- Must always be vectors
- Line width = hairline or 0.001 mm

Engraving area:
- Vectors and pixel graphics

In the JobControl® laser software, cut lines are mostly set as red, while engraving elements are set as black. However, you can assign any color available in the Material Database menu for cutting or engraving.



4.5. How much power does a laser consume?

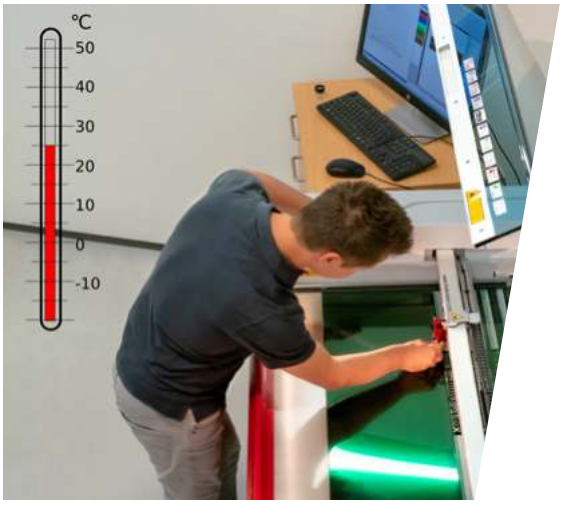
The exact impact of a laser on your electricity bill is tricky to determine. However, the power requirement of a laser is often less than that of a fan heater or an air conditioning system. The total power consumption of a laser system depends on how frequently it is used (and left idle while turned on), the power level applied during laser processing, and any other equipment you use during laser processing (e.g., exhaust system).

Consider the example of an 80-watt Speedy 400 laser system. Let's say that it is used for two hours per day, of which the laser applies maximum power (i.e., 80W) 50% of the time, and half of its power (i.e., 40W) the other half of the time. This results in an approximate power consumption of 50 kWh per month, which is roughly equivalent to the consumption of 2 standard office computers.

4.6. How do I maintain a laser?

Trotec lasers boast a long service life due to their design and durable components. With proper maintenance and use, the typical Trotec Speedy system can last for many years.
Some laser systems are easier to maintain than others. Trotec systems have unique features like InPack-Technology™ – a patented design feature that protects your laser's sensitive components, such as the gantry, laser head, mirrors, and lenses from dirt and dust. This ensures years of trouble-free processing even under intensive use. With regards to the impact on your business, you attain higher productivity and lower running costs. For applications with particularly high dust generation (e. g., rubber and wood engraving), the harsh environment kit provides even better protection. The protection strap shields your laser's electronics and motors from residue. This kit increases your machine's service life and keeps cleaning time to a minimum.

To ensure the longest possible service life for a Trotec laser system, we recommend the following maintenance procedures:



Choose a suitable location for your laser
An appropriate operating environment is particularly important for the system. A temperature around 68-77 degrees Fahrenheit at normal humidity (40-70% relative humidity) is ideal. Heat, cold, and high temperature shifts during operation as well as direct sunlight, negatively affect the service life of your laser.

Only use materials that are suitable for laser processing

Not all materials are suitable for laser cutting and engraving. Some substances may damage parts of the laser or pose a health hazard to the operator. Examples of materials that should not be laser processed are:

- Leather and artificial leather that contains chromium (VI) or PVC
- Carbon fibers (Carbon)
- Polyvinyl chloride (PVC)
- Polyvinyl butyrale (PVB)
- Polytetrafluoroethylenes (PTFE /Teflon)
- Beryllium oxide
- Any materials containing halogens (fluorine, chlorine, bromine, iodine and astatine), epoxy or phenolic resins

Clean your laser regularly

A clean laser work area is essential to smooth operation and consistently high productivity. Residue accumulation can lead to the formation of flames during laser processing. What's more, debris can block air ducts which prevents your exhaust system from functioning properly. The lenses, nozzels and work area/ processing space should be be inspected at least once daily, while the mirrors can be checked daily or weekly, depending on use.

Use an exhaust system

An exhaust system is used to remove fumes and debris that may be formed when a material is laser processed. Over time, residue can accumulate and damage sensitive laser components. Self-contained Atmos exhaust units can be purchased through Trotec.

4.7. Engraving materials

In line with its motto "Everything from one source," Trotec offers a full range of high-quality laser supplies. Trotec's materials collections include more than 1,000 high-quality, competitively-priced materials, such as laminates, acrylic sheets, laserable paper and wood panels.

Products are available in a variety of colors, finishes, and transparencies.

Customers can conveniently order supplies through Trotec's global online stores.

4.8. Important links

Tips for Laser Users

https://www.troteclaser.com/en/knowledge/tips-for-laser-users/
https://www.trotec-materials.com/material-usage-hints

Downloadable Trotec Laser Material Settings

https://www.troteclaser.com/en/knowledge/laser-parameters/

Do-it-Yourself Projects with Step-by-Step Instructions:

https://www.troteclaser.com/en/knowledge/do-it-yourself-samples/
https://www.trotec-materials.com/trainings

Trotec Laser Canada YouTube Channels (Full-Length Tutorials, Creative Applications):

Trotec International (English): https://www.youtube.com/user/TrotecLaserEngraving
Trotec Canada (English and French): https://www.youtube.com/user/TrotecLaserCanada
Trotec USA (English): https://www.youtube.com/c/TrotecLaser
Trotec Germany (German): https://www.youtube.com/channel/UCUOhdSL5iRlRXYQuKC3XAFQ

We hope that this guide has helped you make a more informed decision on starting a laser engraving business. Good look with your new venture! You can rely on Trotec to be your trusted partner in growing your business.

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