



White Paper

*Advantages of lasers versus other methods
of cutting, marking and engraving*



There's a better way to cut, mark and engrave items ...

If you're like most of our customers, you want to process a wide array of materials with precision and efficiency using methods that are user-friendly, safe and reliable.

Some of the more traditional methods for cutting, marking and engraving include:

- Inkjet systems
- Embossing
- Mechanical stamping
- Etching
- Printing
- Mechanical engraving
- Knife cutter
- CNC routing

If you are using any of the methods above, you may be missing a valuable opportunity to increase quality and efficiency, and broaden product offerings. The use of lasers for cutting and engraving offers unbeatable advantages in comparison with other technologies:

One system for all shapes, graphics and materials

Lasers are highly versatile. They can process a huge selection of material types, shapes and sizes. Materials can be processed directly and precisely with the laser without any additional setup, chemical additives or post processing. Even 2 point lettering (needed for very small plates) and fine lines like technical drawings are clearly legible.

Easy handling

The included, Trotec made, software packages fit perfectly to the machines and are compatible with all graphics, CAD, label printing and similar programs. (Vector graphics are recommended for best results.) The customer does not need to learn a completely new software program— the whole job setup can be done in the laser software after preparing it in the daily used program.

Environmental friendly

Laser technology does not require any chemicals such as inks, acids or solvents. Therefore there is also no need for costly disposal and you can work independent from any legal environment restrictions.

Lowest wear and tear

Due to the contact-less process and a limited number of moving parts, lasers keep wear and tear to a minimum. This also saves money, and reduces downtime associated with maintenance.

Non-contact material processing

Sheet material has to be clamped securely and often retained with vacuum. During laser processing, no pressure is exerted on the material (no clamps or other fasteners). Just insert and lase away, and save time and money in material preparation. Mechanical engraving and hot stamping often require the material to be fixed in some kind of way. When using a laser, no pressure is exerted on the material.

More sales volume through new applications

Even the finest geometries are possible with lasers. Besides, you can also use the laser for high-quality photoengravings. Combined with flame polished interior edges, doors to new applications and sales volume open for you.



Less waste

No swarf, needing expensive disposal, accumulates during laser processing. Vapors are exhausted and filtered directly in the working cabinet. In addition, you save time for system cleaning. An exhaust system is required to simply remove particles from the system. The system can be exhausted to outside or internally using an air filtration system.

Best fitting and repeat accuracy

The fine laser beam allows wear-free work with the highest precision. All parts are thereby reliably precise. You avoid costs from rejects and repeated production.

Flexibility in many dimensions

Lasers are highly versatile. They can process a huge selection of material types, shapes and sizes. Materials can be processed directly and precisely with the laser without any additional setup, chemical additives or post processing. Many of our customers work with products of many different shapes and sizes comprised of several materials such as metals, plastics, wood, leather, textiles, glass and paper. Laser systems provide you the flexibility you need to process them without complicated, time-consuming and expensive setups.

Constant quality level

Once you define the parameters of your job, the quality will stay absolutely the same. You can save recurring jobs and materials in the material database and offer perfect results with every new order - making post-productions uncomplicated.

Economical Production

Since you don't have to cover your setup costs, the price per mark stays constantly low, whether you produce 1 or 1000 pieces. Offer unbeatable prices and reach higher margins. Energy consumption is low and daily running costs are reduced to a minimum.

Highest precision and finest details

Using laser technology, you can precisely mark even the finest details. You and your clients enjoy total freedom when it comes to the design, because basically everything that can be drawn can be engraved and marked with the laser.

Discover new possibilities

Lasers are investments that pay off. The increased capabilities create opportunities for improving creativity, expanding your product offering, and engraving and cutting without finishing – providing endless opportunities to win new customers.

No material finishing is necessary

Manual quality flame polishing of milled edges is cost and time intensive. And it conceals the risk of the work piece being damaged or even destroyed during incorrect handling. The laser cut produces glass-clear cut edges and interior contours without additional material finishing. Besides, cast PMMA cuts burr free. Costly deburring is omitted.



Comparison of Laser and Other Methods

	Laser	Mechanical Engraving	Embossing/ Mechanical Stamping	Printing	Inkjet	Etching
Quality	***	**	*	**	*	***
Speed	***	*	***	***	***	*
Durability	***	***	***	*	*	***
Wear and tear	***	*	**	*	*	**
Flexibility	***	***	*	*	***	*
Low mechanical material stress	***	*	*	**	**	*
Environmentally friendly	***	**	**	*	*	*
User friendliness	***	*	*	**	***	*
Software interface	***	**	*	*	***	*