

Laser Systems for

→ **Processing Technical Foils**



[www.troteclaser.com](http://www.troteclaser.com)



Cutting of foils for control panels,  
flexible strip conductors  
and for the manufacture of membrane  
keyboards and graphic overlays

# → The advantages of laser technology

**The use of laser technology for cutting and marking foils offers unbeatable advantages compared to other technologies:**

## **Laser – simply perfect for foils**

Laser allows for accurate cutting of even the smallest radii and for ultra-fast manufacture of simple geometries. An unbeatable advantage: Several layers, such as carrier, adhesive and top foil, can be cut in one step. At the same time, controlled fusion of the layers produces neat, sealed cutting edges. Controlled supply and extraction of air ensure a clean surface for a wide range of different foils. Consequently, no further treatment of the edges or surface cleaning is required.

## **Non-contact material processing**

When cutting with a laser, no pressure is exerted with a die on the foils, the entire process is contactless, the end product therefore perfect. Unlike in processes using die cutters or knives, laser cutting does not result in paint chipping off from the end product. Clamping of the material is not required. All you need is a vacuum so that the foils are lying flat on the surface to be processed. This makes production easier and thus the working process faster and easier.

## **More accurate than cutting dies**

The laser beam is not subject to wear, it produces a precise and accurately repeatable result of your end products again and again. You can produce intricate contours in an accuracy range of up to 1/10 mm. Even the smallest tolerances can be realised without difficulty. Another plus: A camera system detects distortions in the print and allows for dynamic adjustment of the cutting path.

## **No costs for the cutting dies**

A laser in conjunction with an optical detection system for positioning the workpiece allows for absolutely accurate cutting of printed materials; no cutting dies are required. Especially for small series of up to 1,000 pieces, the laser is much more economical. The costs for the manufacture, maintenance and storage of cutting dies fall away. In addition, it allows for absolutely flexible work, while any changes in the design can be handled promptly.

## **Superior processing of multi-layer foil structures**

Several layers, such as supporting, adhesive and top foil, can be cut in one process step. The sealed cut guarantees clean cutting edges without any soiling. Depending on the layer structure and the foil strength, up to 10 layers in a composite can be cut.

## **Data - Marking & Kiss-Cut**

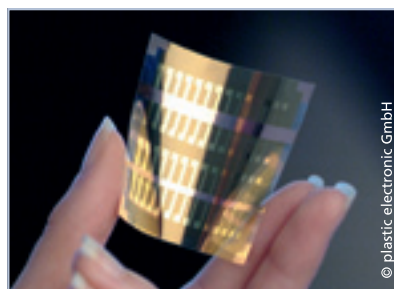
Using a laser beam, foils can be marked at a very high speed. Data can be applied on the fly, and even the kiss-cut effect can be implemented without difficulty. Handling carrier and adhesive foils is thus much easier and much more efficient.

## **Same quality on the inside and the outside**

A knife or a cutting die have a conical shape. The edge of the laser cut, on the other hand, is always positioned at 90 degrees. Outer and inner contours are cut with the same high edge quality.



Cutting of polycarbonate and polyester control panels and membrane keyboards



Flexible strip conductors for electronics made of polyimide



Polycarbonate speedometer dials for the automotive industry



Series production in the highest quality and for the smallest tolerances



An optical detection system optimises the operating sequence.



Prototyping of plastic and metal foils

# → Why Trotec?

## Accurate contour cutting with i-cut®

The i-cut® camera system enables the precise contour cutting of printed materials. Even flexible materials such as banners and flags are cut with great precision. There is no need for elaborate positioning: distortions in the printed design are identified and the cutting path is adjusted dynamically. The combination of the optical registration mark recognition system and a Trotec laser can generate process cost savings of up to 30%.

## Fast cut

Accurately adjusted axis drives and an innovative control system guarantee a precise and fast laser cut with Trotec systems. Unlike cutting plotters, lasers are not subject to material resistance. Laser cutting is therefore faster. Another plus: There is no need to raise or rotate the laser beam, as in the case of a knife. Trotec laser systems make full use of this advantage in speed and detail, especially when cutting fine geometries.

## Safe production environment

Special protection (laser safety specialist, shields, safety glasses) is required when operating open laser systems (Class 4). However, Trotec lasers are Class 2. The enclosed design of the Trotec laser systems enables the quick and efficient extraction of dust and gas.

## Reliable system with maintenance-free components

Trotec lasers only contain the highest quality components of leading manufacturers. The precision guides and maintenance-free servomotors, for example, provide you with the best cutting results. Or there is our InPack Technology, which provides optimum protection for the optics, motors and electronics. Trotec lasers are therefore highly reliable and require minimum downtime. Even during peaks in production, when the deadline is tight, the machine runs reliably.

## In safe hands

Trotec develops, manufactures and maintains its own systems. Members of the service team receive constant training and use the most up-to-date IT systems in order to ensure your success. The many years of experience of our employees in the applied technology laboratory guarantee you the best level of support and advice.

## Simple exchange of data

Import your data directly from your graphic or CAD software and off you go. Guaranteed to be quick and easy to operate with all file formats such as .pdf, .eps or even .ai.

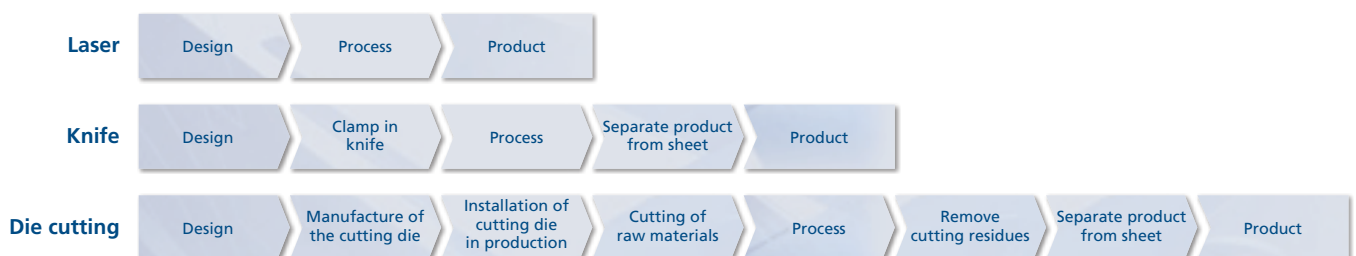
## Laser cutting of foils with Trotec lasers - always an advantage:

Faster than conventional cutting plotters

More accurate than cutting dies

More economical for small series of up to 1,000 pieces

## A comparison of material processing options



### Quality of the cutting edge

**Laser cutting**

Fast cut, cutting to minimum tolerances, welded edges

**Knife cutting**

V-shape cut, uneven edges

**Die cutting**

Application of force results in deformation of material and often causes chipping of the printing

# → Facts and Figures

<b>Typical Trotec systems:</b>	SP1500, Speedy 500, Speedy 300
<b>Working areas:</b>	up to 1500 x 1250 mm
<b>Laser power:</b>	up to 400 watt
<b>Material thicknesses:</b>	up to 40 mm with 400 watts laser output
<b>Feed:</b>	6000 mm/min on 3 mm acrylic and 400 watts laser output Max. 60.000 mm/min
<b>Laser class:</b>	Standard: Laser safety class 2 With pass-through hatch: Laser safety class 4
<b>Software:</b>	Controlled by TroCAM CAD/CAM (HPGL) and i-cut® or via printer driver in combination with Trotec JobControl
<b>Camera system i-cut®:</b>	Intelligent adjustment of the cutting path, reliable registration mark recognition, intelligent workflow, luminous LED light direct on the camera, simple to operate
<b>File formats:</b>	All current file formats, e.g. .AI, .EPS, .PDF, .PS, .CDR, .DXF, .DWG, .JPG, .PSD
<b>Typical materials:</b>	Polycarbonate: Makrolon <sup>®</sup> , Lexan <sup>®</sup> , Durolon <sup>®</sup> and many more Polyester: Thermolite, Polarguard and many more Polyimid: Mylan <sup>®</sup> , Kapton <sup>®</sup> , and many more



**Trotec Laser – developed and built in Austria.**



Front-panel foils: High-quality screen printing and laser cut



Membrane keyboards: extremely economical for small series



Perfect repeat accuracy

[www.troteclaser.com](http://www.troteclaser.com)

Trotec Produktions u. Vertriebs GmbH  
Linzer Str. 156, A-4600 Wels, [trotec@troteclaser.com](mailto:trotec@troteclaser.com)  
Tel. +43 / 72 42 / 239-7002, Fax +43 / 72 42 / 239-7380

