

Laser cutting

for post-print
paper processes

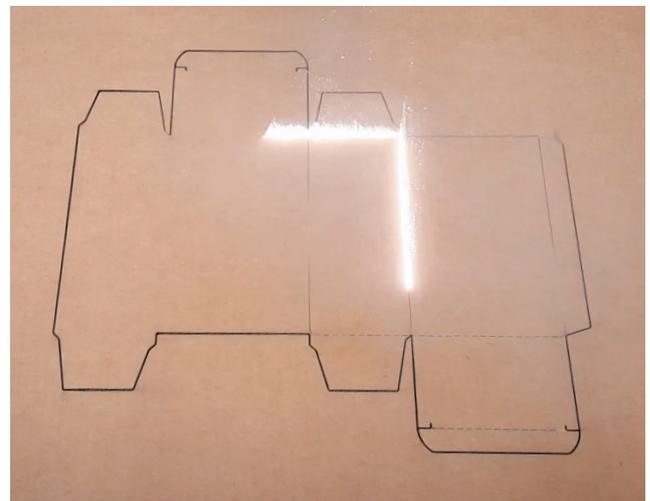
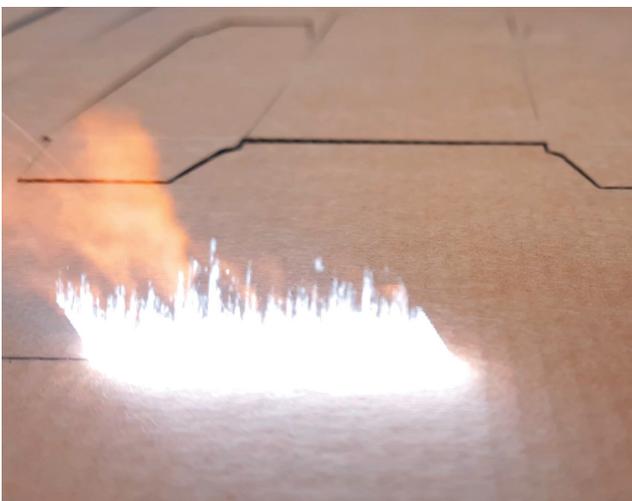

RAYLASE



THE POWER OF WE

**Are you ready for
the new age in digital
manufacturing?**

Recent developments in the laser industry and changes in customer behaviour are bringing more flexibility and additional application fields to the market for post-print paper processes in the graphics industry. As a result, laser scanner technology now offers a more efficient process in the production line for cutting, folding, and processing materials like paper, carton, and corrugated board.



Latest trends

in paper and print

The centuries-old paper and packaging industry is going through transformational change.

- Innovations in laser technology are already supporting leading-edge e-commerce businesses in the packaging of fast-moving goods.
- Traditional printing and copier companies are adding laser services to their portfolio for more flexibility as e-commerce solutions create consistent printing jobs using a digital workflow.
- Web2print (W2P) software services combined with laser technology are allowing small and mid-sized companies the independence to produce their own customised paper products.
- Large paper packaging companies are seeing the integration of laser technology as a logical next step to upgrading more efficient and flexible end-to-end production processes.



Laser technology is now sophisticated enough to be applied to multiple aspects of the paper production and packaging process and cost-effective enough to ensure a return on investment. RAYLASE offers solutions for diverse applications to integrate into your paper production process that can be increasingly digitised, automated, and connected to each other.

Laser cutting

high speed and high precision

Laser cutting is carried out with a set of CO₂ high-power lasers and always in combination with a scanner (or multiple scanners for larger fields) that generates the cutting pattern. The accuracy and precise control of the scanner enables smaller, finer details to be achieved.

RAYLASE solutions offer flexible wide field processing for small spot diameters and digital electronics for better control. With the integration of the SP-ICE-3 control card, different components can be connected with each other via the ethernet to exchange information and provide real-time feedback.

AXIALSCAN-II-50



AXIALSCAN-II-30

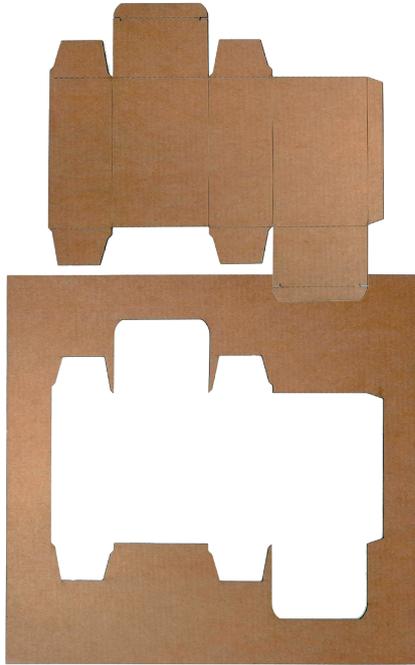


SP-ICE-3 control card



and the Scan Field Calibration Tools

Our laser scanning solutions are easily added to your portfolio, economical to change and quickly adapted for new products or additional market segments. They can be implemented for different sizes, formats and thicknesses of paper sheet, a range of packaging sizes and large or small quantities.



Special Features

- Processing-on-the-fly integrates conveyor belt systems for processing moving parts to increase speed of production
- Speed and position dependent power control for homogenous cut quality
- Dash dotted lines
- Tracking error compensation

Your benefits

- Innovative technologies – digital, automated, connected
- Much more flexibility - job changes within minutes and small series orders possible
- Significantly longer machine running time and tool life
- No more costs incurred for acquiring or storing blades
- Cutting, engraving, and marking with one tool
- Low maintenance

Scan field calibration

a tedious & costly process

Companies are often challenged to calibrate the scan field optimally themselves without the necessary expertise on site. Without the necessary equipment, the measurements are extremely time-consuming taking up to half a day for a single machine, commonly small measuring points are marked manually then entered in a calibration tool such as the Multipoint-editor from RAYLASE, and time invested usually kept to a minimum by reducing the number of measurements points. The accuracy of the resulting correction file suffers as a result. The best possible accuracy that can be achieved manually considered that there are no errors with manual data entry and with several time-consuming iterations is $\pm 50 \mu\text{m}$.

Calibrating the field is essential for a uniform cutting result at the initial setup process and over running time, a cali-

bration routine is recommended to ensure that the cutting quality is maintained. The calibration of the scan field corrects tolerances in:

- Scan-Field" size
- Scan field homogeneity
- Rotation
- Working distance (focal plane)
- Alignment to other „scan fields across the laser process field
- Tilt between scan field and laser process Field

The RAYLASE Scan Field Calibrator (SFC) helps position the spot accurately, correct distortions in scan fields and significantly reduce time required to measure calibration patterns:

- Calibrates large working fields from 300mmx300mm up to 900mm x 900 mm
- Greatly reduces error risk e.g., resulting from manual measurements
- Automatically and autonomously aligns overlapping fields
- Increases measurement accuracy greatly $\pm 15 \mu\text{m}$ compared to manual measurement
- Can currently detect laser process fields of 600mm x 600 mm
- Massively reduces time required to measure the calibration pattern (mins vs hours)



SFC device easily integrated into your machine
Connects with Multipoint Editor and SP-ICE

No limits

for the future of paper production



Materials

- Paper
- Card
- Corrugated board
- Labels
- Folding cartons and more ...

Punching, stamping, and cutting machines that need regular maintenance and tool replacement are making space for agile, adaptable, and automated laser processes in the production line. Traditional paper processing and printing methods meant batch sizes had to be large enough to make the associated processes economically viable. In future, companies will no longer be limited by machinery, product batch sizes or marketing lifecycles. More dynamic and agile marketing cycles will allow for a shift towards smaller quantities in paper products and formats tailored to specific target audiences. As standardisation makes way for customisation, companies will no longer need to settle for standard cartons or take the next best size for their products.

For you, that means more creativity and flexibility to size and design your product, cost savings and less waste.

And even with the very „thick boards“ such as cardboard boxes up to 10 mm, processes can be significantly improved by laser cutting and productivity increased. One option is to use many scanners and lasers or to increase the field size and rely on a few lasers & scanners with high power. Since the former can complicate the machine design, the trend is clearly towards higher laser power of up to 3 KW to cut thicker cardboard in larger formats quickly and in good quality.

The special challenge in the future will be to produce as cleanly and safely as possible at high laser power. For example, it must be ensured that there is no contamination on the optics of the scanners and that the sensors sound the alarm at the slightest problem.

RAYLASE also has promising solutions to offer here. Firstly, production under clean room conditions, which started in April 2021 and prevents particles from settling on the lenses and causing burns. Secondly, we are continuing to develop

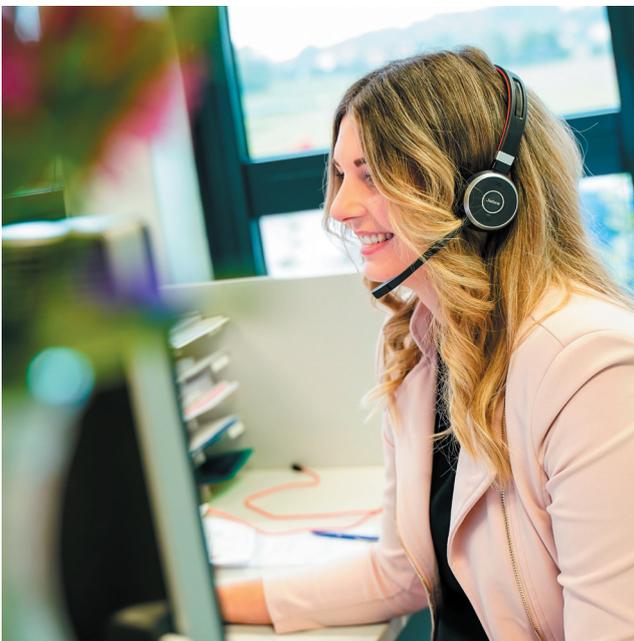
our protection systems and are currently working on several sensor systems for the mechanics, the protective glass, the optics and temperature measurement on the motor parts. In the long term, we at RAYLASE, together with our customers, want the machines to give feedback. Because increased safety leads to fewer failures and increases productivity and quality.



RAYLASE - your partner

for paper production and processing

Getting up to speed and acquiring the necessary knowledge for laser implementation does not need to be complex. However, depending on the scale of your business, ramping up to the new technology could take time. Factors to consider



include assessing how different materials react, humidity of the material and in your environment and the laser parameters required. RAYLASE supports you here during initial set-up with products such as the AXIALSCAN-II that ensure your lasers are optimally placed according to the optics and mountings of your machine and your specific needs. We accompany you through the development phase to product selection, software interfaces and employee training at all levels from technician to commissioning engineer.

Besides expert support and training, partnering with us provides you with ongoing access to the latest developments in laser technology. With RAYLASE at your side offering specialist expertise and experience, the time to upgrade is now.

Headquarters:
RAYLASE GmbH
Wessling, Germany
☎ +49 8153 9999 699
✉ info@raylase.de

