

# Laser Processing Capabilities

## LASER CONVERTING TECHNOLOGIES

Multiple processing capabilities save time while increasing productivity and throughput.

### LaserSharp® Processing Modules

LasX creates processes and systems that combine one or more of the following processing modules multiple laser converting capabilities in one system to noticeably increase your system's productivity.

- **LDM** – ideal for straight-line or downweb laser scoring, slitting and perforating for easy-open packaging.
- **LPM** – all the advantages of the LDM but adds crossweb laser cutting, scoring, perforating, etching or ablating.
- **Dual-Mode LPM (dm)** – excels at precise, accurate, contoured downweb scores and slits as well as the high speed processing of small crossweb patterns less than 170mm (6.7") in size.
- **Flex\*** LPM (flex) – automatically adjusts to two processing area sizes.
- **GT Option (gt)** – uses optimized beam steering motors with lighter mirrors for faster processing speeds.
- **Extreme Drilling LPM (xd)** – High-performance drilling or micro-perforating for breathable packaging.

Process development at LasX is considered a partnership and our team is dedicated to working cooperatively with you to achieve your goals. We'll suggest processing improvements, laser equipment and laser-friendly materials (see back page) to enable the best possible solution for digitally converting your parts within a processing window designed for your manufacturing environment.

### Laser processing capabilities

**Laser Through-Cut:** To laser cut a material through all layers or components.

- **Common applications:** printed graphic art materials, folding cartons, medical device components, graphic overlays and other industrial components.

**Laser Kiss-Cut:** To cut the top layer of self-adhesive paper without penetrating its backing or liner, resulting in the easy removal of the top layer from bottom release liner.

- **Common applications:** Labels, stickers, microfluidic subassemblies, spacers.

**Laser Ablate:** A dry, non-contact, digital, single step process that removes the top layer of two materials that have been bonded together using a laser beam.

- **Common applications:** isolated circuit traces for medical biosensors, solar panels, RFIDs and flexible displays.

**Laser Etch:** The laser beam is used to partially remove material from a homogeneous substrate at a specific depth (without completely penetrating all layers) in order to create a three-dimensional pattern in it.

- **Common applications:** Product identification, instructions, serial numbers or anti-counterfeit features etched in plastics and acrylics; electronic components and circuits to replace chemical etching.

*continued*

### Laser Module process capabilities

	Downweb Score	Perforations	Contour Score	Downweb Micro-drilling slow ○ ● fast	Pattern Drilling	Macro-drilling >250µm (0.01 in)	Etching	Crossweb Patterns	Drill/Score
LDM	✓								
LPM	✓	✓	✓	○	✓	✓	✓	✓	
LPM <sup>flex</sup>	✓	✓	✓	○	✓	✓	✓	✓	✓
LPM <sup>dm</sup>	✓	✓	✓	●	✓		✓	✓	✓
LPM <sup>xd</sup>				●	✓				

- Speed for micro-drilling is dependent on the laser module's tuning.
- The LPM's maximum field of view is 600mm x 600mm (23.6" x 23.6"), producing cross-web lines and features across full-web widths.
- The LPM<sup>flex</sup> can process micro-drill holes at the 140mm (5.5") field of view and macro-drill holes at the 500mm (20") field of view.
- Maximum cross-web processing by LPM<sup>dm</sup> is 70mm (2.75").

### Import popular design file formats

Our powerful LightGuide® software directly imports several design file formats to guide the laser beam around the material—no special file preparation or handling is required. Importable design elements include:

- Pattern vector entities from .AI, .DXF and .PDF
- Raster images embedded in .PDF files
- Raster-only images from popular graphic files (.JPG, .GIF, .BMP, .PNG and .TIF).

# LASER CONVERTING TECHNOLOGIES

*Laser processing capabilities continued*

**Laser Perforate:** To vaporize a series of small, uniform holes in a material.

- **Common applications:** breathable or modified atmosphere flexible packaging, microwavable features, venting for rapid filling or package palletization, decorative elements in paper pieces, and tear lines for easy separation of parts.

**Laser Score:** By precisely monitoring the depth of a cut, the top and/or internal layer(s) of a material is removed, typically to allow for easier folding or tearing along the score line.

- **Common applications:** fold lines in paper greeting cards, folding cartons, invitations, or brochures, and easy-open tear strips and windows in flexible packaging films.

**Laser Via Hole drilling:** To create a small opening in a substrate that allows for a conductive connection between different layers.

- **Common applications:** printed circuit boards and medical electronic components.

## Laser types

Depending on application and material type, different laser sources may be used to perform each process capability:

**CO<sub>2</sub>:** Most common laser source for multiple process capabilities. Best suited for processing non-metallic materials such as plastics, papers, polymers, textiles, foams, and adhesives. Common applications include those for paper and print, flexible packaging, and industrial markets.

**Fiber:** Ideally suited for the ablation of thick conductive coatings. Also capable of metal and plastic welding. Common applications include electronic or medical components.

**UV:** Ideal for the fine ablation of very thin (<1 μm) conductive coatings or thin non-conductive coatings. Common applications include electronic components, biosensors, and precise electrode patterns.

## Suitable materials for laser processing:

- Paper and paperboard products
- Adhesives and label stock
- Plastics
- Acrylics
- Polyester
- Vinyl
- Textiles
- Foams
- Abrasives
- Corrugated cardboard
- Polypropylene
- Metalized films
- Conductive coatings
- Polycarbonates

## Laser Processing Sample Applications



Through-Cut



Kiss-Cut



Scoring



Ablating



Etching



Perforating



Via Hole Drilling



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