

Laser Processing of Flexible Packaging Materials - *An Open and Shut Case*

“What we’re seeing today is that you get a tremendous response to things that are more convenient...so anything that simplifies their life is good,” so says Stephen W. Sanger, the chairman and CEO of General Mills Inc.

Growth within the flexible packaging industry are for products that simplify people’s lives. Reclosable packages and standup pouches lead the way. Case-ready and fresh-cut packaging are not far behind. Consumers value products in convenient, user friendly packages. Purchasing decisions are influenced by the value of features that flexible packaging can create. Of the many technologies applied to provide unique product features and customer convenience, lasers are emerging as one of the most versatile. Laser technology allows a converter to have both flexibility and precision in processing. Laser scoring and laser micro-perforation add easy-open, easy-tear, easy-breathe, easy-fill, and easy-pack features to enhance the usability of flexible packages.

Although a reclosable zipper is a common package feature, the initial tear is often difficult to manage. Packages often will not tear open, or the tear simply runs the wrong direction. The precise and consistent solution can be obtained through laser scoring. Laser processing delivers a well-focused laser beam to vaporize a narrow through on the film, resulting in a line of weakness along the score which yields a directional tear. The scoring depth can be precise, often leaving the barrier layer intact yet maintain package strength. A laser scored tear line combined with reclosable packaging answers the consumer’s demand for convenience, the producer’s need to preserve food quality, and the converter’s requirement on package integrity. The process is repeatable, clean, fast, and easy to adjust for varying materials.

Laser scoring can be applied to both web direction and cross-web. Two dimensional laser scoring provides a multitude of flexibility and utilization. For cross-web scoring, special scoring shapes such as tear drops and corner-tear on bags can be created on-the-fly. Contour score lines also help to provide directional tear for a slider. By simply increasing the laser power, two dimensional laser scoring simply becomes a two dimensional laser slitting operation. This opens opportunities for innovative shaping of packages and creates nesting that saves film materials.

Lasers are also ideal for processing of thicker flexible materials. Scoring can be adjusted for multi-levels with intermittent deeper scoring to depth specification. Where suitable, laser micro-perforating is another way to create easy-tear or easy-open package for material as thick as 8 mils.

Laser micro-perforation has many advantages. Lasers can produce a variety of small hole sizes. Because lasers use heat energy to evaporate material, no slugs remain on the film. The holes are clean and sealed along the edges. The result is package integrity that is not compromised, even at higher hole density.

Laser micro-perforation makes filling of fine particles easier. The fine hole size made by lasers can significantly reduce spillage that directly translates into cost savings. Micro-perforation creates breathable packaging that achieves better airflow. Perforated bags compress readily and are more stable when stacked. Transportation costs may be reduced as more packages

can fit in a container and provide a more stable shipping load.

One of the premier laser systems solution providers laser is Preco Laser Systems, LLC (PLS). PLS provides a complete product portfolio of AcuTear® and AcuBreathe™ systems designed to integrate into manufacturing operation and are adaptable to desired web configurations. The laser system integrates the



laser beam, vision and web speed into a single control that monitors web speed, beam movement and delivers precisely the right amount of laser power for the process. PLS also provides manufacturers a jump-start on getting their products on the shelf fast(er).

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