

SMART UP YOUR PACKAGING

■ FLEXIBLE PACKAGING ■ LASERS ■ ROFIN



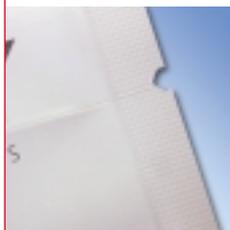
WE
THINK
LASER

Easy to open packages are loved by consumers – that's where the laser scribing method shows its advantages

Easy Opening – laser scribing keeps barrier properties intact

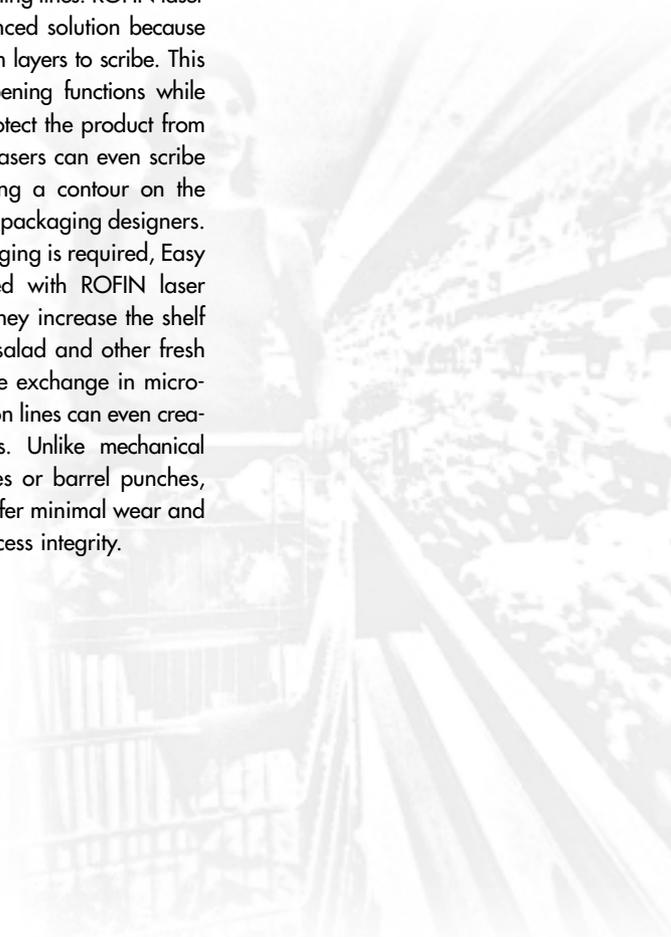
Easy Ventilation – laser perforation technology, increases the shelf life of perishables

Easy Opening – high flexibility of the laser allows any freeform scribing pattern



Next-level scribing and perforating solutions for Easy Opening and Easy Ventilation

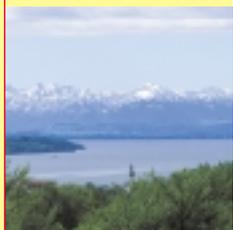
In consumer goods industries, packaging is considered a crucial factor in the consumer's product experience. Yet difficulties in opening packages for anything from peanuts to sauces are surprisingly common, causing spills and even minor injuries. The opening process often requires too much initial force and is hard to control because of missing or mechanically created opening lines. ROFIN laser systems offer a more advanced solution because they can select individual film layers to scribe. This allows for perfect Easy Opening functions while leaving layers intact that protect the product from light and humidity. ROFIN lasers can even scribe freeform lines, e.g. following a contour on the print – a new inspiration for packaging designers. Where perforation of packaging is required, Easy Ventilation functions created with ROFIN laser technology take the lead: They increase the shelf life of perishables such as salad and other fresh produce, or control pressure exchange in microwave ovens. Laser perforation lines can even create easy-tear-off applications. Unlike mechanical tools such as rotating knives or barrel punches, lasers work contact-free, suffer minimal wear and tear and offer excellent process integrity.



ROFIN / BAASEL LASERTECH
in Starnberg, near Munich,
is responsible for all Laser
Micro activities of the ROFIN
Group

Innovative solutions are
the result of working
closely with our clients

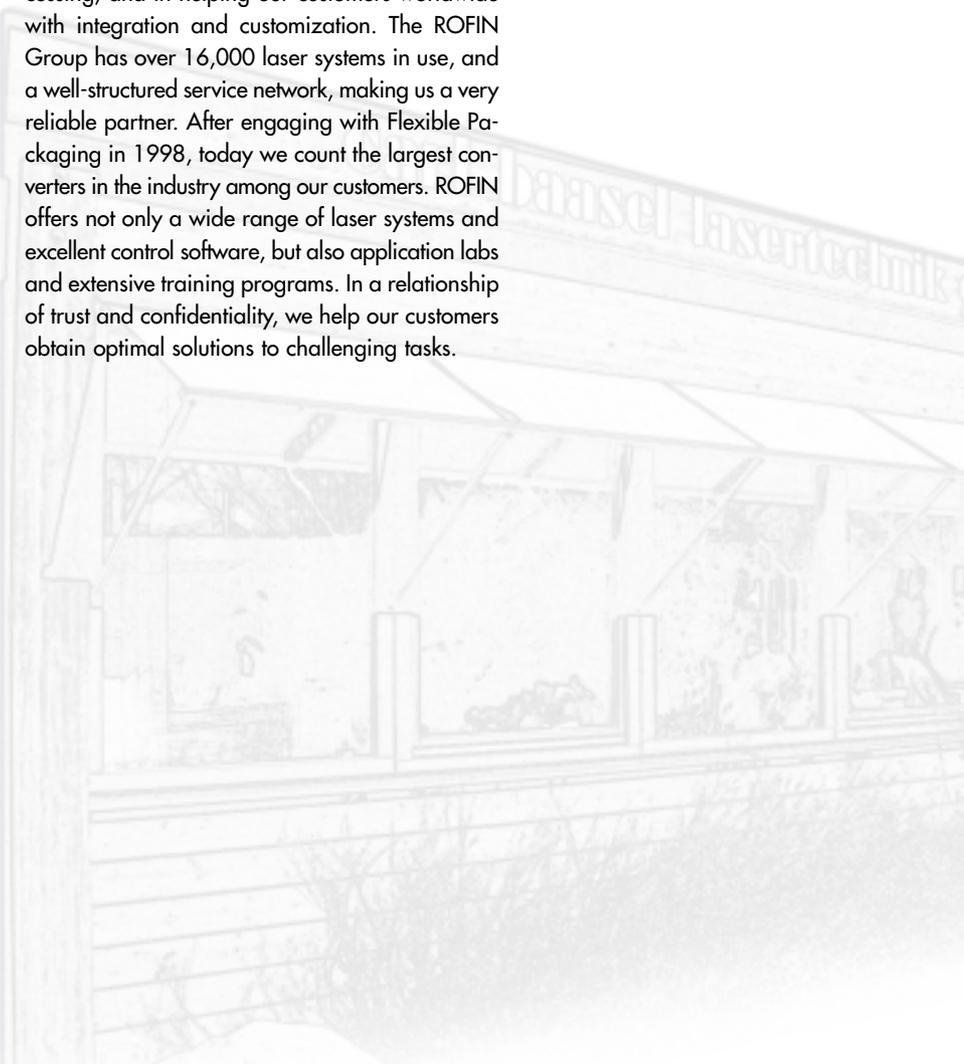
Competence in customized
solutions



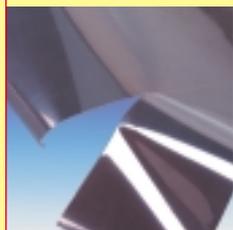
ROFIN / BAASEL LASERTECH

ROFIN Group

With more than 30 years of experience in laser welding, cutting and structuring, ROFIN Group has taken a unique approach to finding solutions for industrial processes. We take pride in making efficient laser tools for high-precision material processing, and in helping our customers worldwide with integration and customization. The ROFIN Group has over 16,000 laser systems in use, and a well-structured service network, making us a very reliable partner. After engaging with Flexible Packaging in 1998, today we count the largest converters in the industry among our customers. ROFIN offers not only a wide range of laser systems and excellent control software, but also application labs and extensive training programs. In a relationship of trust and confidentiality, we help our customers obtain optimal solutions to challenging tasks.



Selective Weakening of flexible film



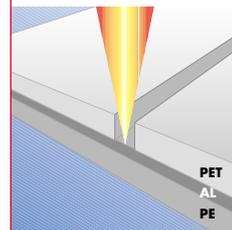
Laser scribing is a contact and wear-free process



Laser Scribing even allows freeform scribing paths for the opening line



Lasers scribe reliably into one layer only



Laser Scribing

Easy Opening – selective weakening of flexible film

Laser Scribing is a method to apply Easy Opening functionality to multi-layered materials for packaging. However, traditional tools tend to scribe too deep, damaging all layers and jeopardizing product integrity, or too shallow, demanding too much initial force from consumers to control the opening process. As a much more flexible solution, laser scribing can focus on individual film layers of composite packaging material. Polymers like PET, PP or PE have different properties of absorbing and reflecting light at the CO₂ laser wavelength. The absorption in one layer results in ablation while the next layer made of a different material stays 100 percent intact. Aluminum or metallized layers, on the other hand, act as a highly reflective barrier to the laser light. All of this allows precise localization of the desired scribing structures within composite packaging materials. The Easy Opening function can therefore be applied without compromising the barrier or mechanical properties of the bag or pouch. The opening lines are clearly visible. Opening the package becomes easy to control for the consumer. Moreover, laser scribing is a contact- and wear-free process that guarantees consistent quality and high process reliability.

Choose your path

In most cases, laser processing in flexible packaging is done on web-shaped material. For scribing lines in web direction, ROFIN offers lasers with beam splitters distributing the laser into individual focusing heads. Each laser beam scribes one line into the web. For materials that require cross web processing, like most bags and pouches, our StarScribe CW (cross web) uses fast scanner heads: Mirrors, driven by Galvanometer motors, that deflect the beam on multiple axes. The control software not only lets the beam compensate for the web movement, it can even be used to create freeform scribing paths such as waves, squares etc. This opens up new possibilities for food and other packaging designers to make their products more usable, more attractive and unique.

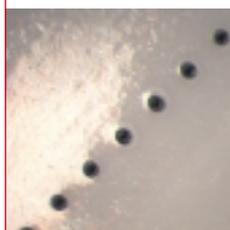
Perforation can also be used for Easy Opening and Easy Tear-off applications



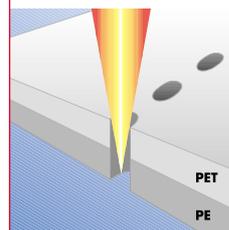
Laser Perforation



Optimal climate management can be achieved through holes in adjustable size from 60-300 μm in diameter

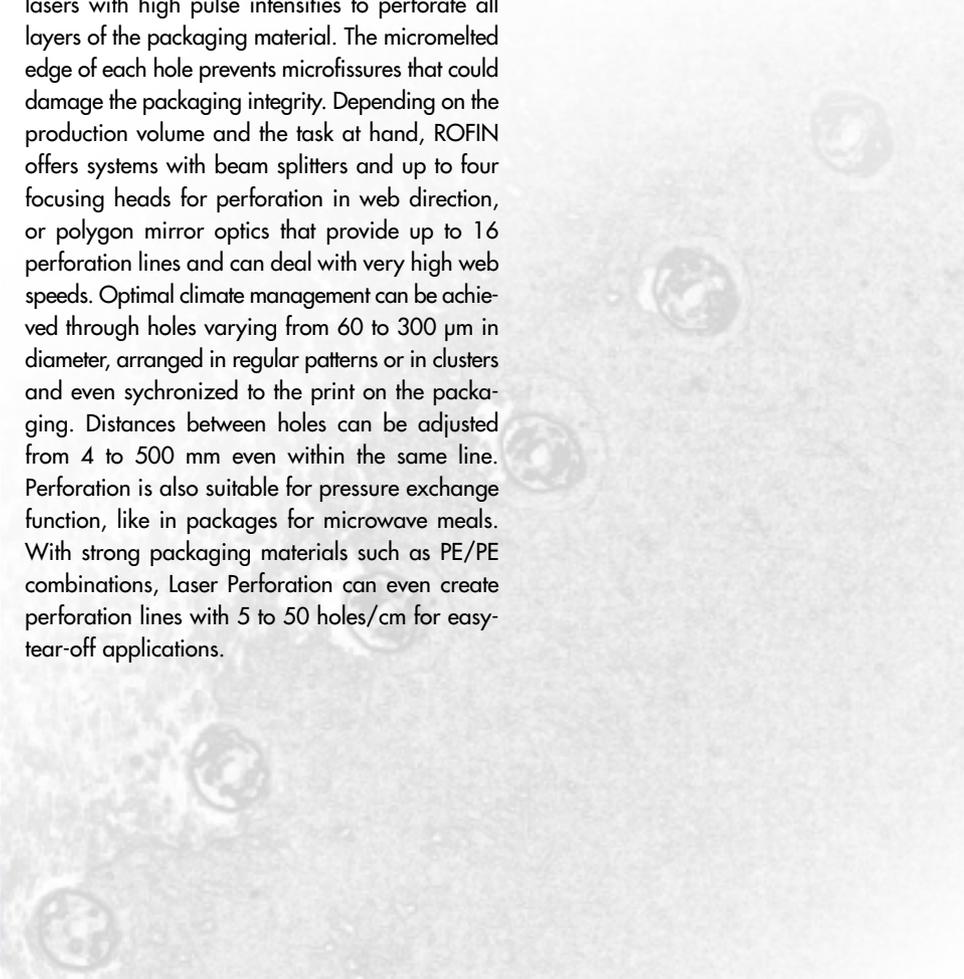


Holes with a melted edge prevent microfissures



Easy Ventilation – micro-air-holes enhance shelf-life of food

In perishable foods packaging, quality and shelf life depend on a balance between air circulation and preservation of humidity. For adequate perforation of the packaging, ROFIN lasers offer significant advantages over conventional processes, such as needles or flame: Based on 25 years of experience in laser perforation, ROFIN uses CO₂ lasers with high pulse intensities to perforate all layers of the packaging material. The micromelted edge of each hole prevents microfissures that could damage the packaging integrity. Depending on the production volume and the task at hand, ROFIN offers systems with beam splitters and up to four focusing heads for perforation in web direction, or polygon mirror optics that provide up to 16 perforation lines and can deal with very high web speeds. Optimal climate management can be achieved through holes varying from 60 to 300 μm in diameter, arranged in regular patterns or in clusters and even synchronized to the print on the packaging. Distances between holes can be adjusted from 4 to 500 mm even within the same line. Perforation is also suitable for pressure exchange function, like in packages for microwave meals. With strong packaging materials such as PE/PE combinations, Laser Perforation can even create perforation lines with 5 to 50 holes/cm for easy-tear-off applications.



StarScribe Easy Remote S/P

For high production speeds, available with laser power of 100, 200 or 300 W



StarScribe Easy S/P

Compact 100 W turnkey CO₂ laser system that can easily be integrated into existing production lines and winding systems

StarScribe WD

High volumes of scribing lines in web direction



StarScribe CW

For any freeform scribing contour – flexible software allows easy product change



PerfoLas Film

For perforating packaging films, mostly applied for Easy Ventilation, but also for Easy Tear-off



Laser systems from ROFIN for flexible packaging

StarScribe Easy is a 100 W compact turnkey CO₂ laser system that can easily be integrated into existing production lines and winding systems. The flexible, articulated arm allows fast beam positioning with minimal additional effort. With one, two or four processing heads, *StarScribe Easy* lasers are a cost-effective solution that yields excellent results.

If higher laser power is required (e.g. for higher production speed) ROFIN offers the *StarScribe Easy Remote S/P* with 100, 200 or 300 W.

StarScribe Easy S (Scribing) is used for scribing applications in web transport direction with lines that can be continuous, interrupted or synchronized to the print. Fields of applications range from product development to serial production.

StarScribe Easy P (Perforation) is an air-cooled pulsed CO₂ laser for perforating a lower density of holes at low to medium winding speeds. Holes can be synchronized to the print or continuous. Main applications are for Easy Ventilation in low-volume production.

StarScribe WD (web direction) is an extremely high performance module which can be integrated into existing slitters (as all other systems listed) from all established manufacturers. Up to 8 processing heads allow simultaneous scribing. High volumes of scribing structures in the web direction at web speeds of up to 600 m/min are therefore possible. The system is powered by 100 to 2,000 W laser sources and can also be used for film cutting or scribing with lines that can be continuous, interrupted or synchronized to the print. *StarScribe WD* includes convenient control software, a support frame and protective housing.

StarScribe CW (cross web) is designed for flexible scribing contours that are not parallel to the web direction. Its main applications are bags and pouches whose specific production and filling process require this set-up. Using up to six extremely fast scanner heads, *StarScribe CW* can make lines that are cross-wise to the web, or any other pattern such as circles, squares, etc. The process is controlled through a LaserCAD-based software package – developed by ROFIN – that guarantees flexible programming and a fast change of scribing job. The laser is not only fit for scribing but also for cutting flexible structures. The *StarScribe CW* is designed for a maximum web width of 1600 mm.

Benefits of laser scribing for Easy Opening

- Cuts individual film layers, leaving others unharmed
- Allows freeform opening structures
- Minimal wear and tear in the production process
- High process reliability

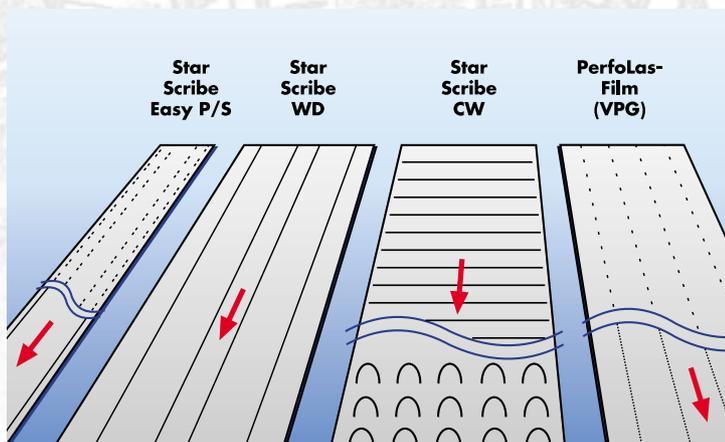
Benefits of laser perforation for Easy Ventilation

- Precise control over size and numbers of perforations
- Small perforations with crack-proof edges
- Can be used to create Easy Tear-off applications
- Minimal wear and tear in the production process
- High process reliability

PerfoLas Film is used for perforating packaging films, mostly applied for Easy Ventilation, but also for Easy Tear-off. Through a special polygon mirror setup and the variable pattern generator (VPG, patented by ROFIN / BAASEL LASERTECH), the laser beam is split up into several processing heads. It allows placement of holes with diameters of 60 to 300 μm at distances of 4 to 500 mm, arranged in regular patterns or in clusters. For Easy Tear-off functions, the standard version of the *PerfoLas Film* can perforate 5 to 50 holes/cm per line. High quality even at web speeds of up to 600 m/min is guaranteed by very short but high energy pulses. With a maximum web width of 1100 mm and up to 16 parallel perforation lines in web direction, the system is particularly suitable for high-volume production lines.

At your disposal – our application lab

For demonstration of our capabilities for both Easy Opening and Easy Ventilation we offer to prepare samples for our customers with their original film material in our application lab. Our experienced staff will prepare these samples using our inhouse winder in conjunction with StarScribe CW, StarScribe Easy S/P, as well as PerfoLas. With web width up to 600 mm it is possible to produce experimental packages with samples made in our application lab.



SOLUTIONS FROM A SINGLE SOURCE

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