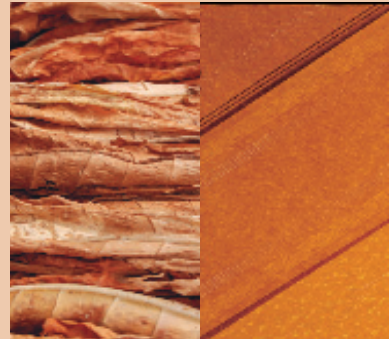


HIGH SPEED LASER PERFORATION

■ TOBACCO INDUSTRY ■ LASERS ■ ROFIN



WE
THINK
LASER

Widest range of C.U. values at the lowest coefficient of variations

All international C.U. values can be perforated with 4 to 32 perforation heads

Quality assurance with online video porosity measurement

Systems are also available for flexible film perforation



Lasers in the tobacco industry



ROFIN's Perfo Series - The Masters of Perforation

With its Perfo systems, ROFIN has set the benchmark for laser perforation of cigarette tipping papers and plastic films for over 20 years now. Without the use of components like beam switches, masks, needles, choppers or perforation electrodes, the contact-free laser perforating process offers optimum hole quality and process control. Modifying production parameters is a breeze, so changing market requirements or future law restrictions can be met with great flexibility and without additional investments.

Unique beam multiplexer for maximum performance and accuracy

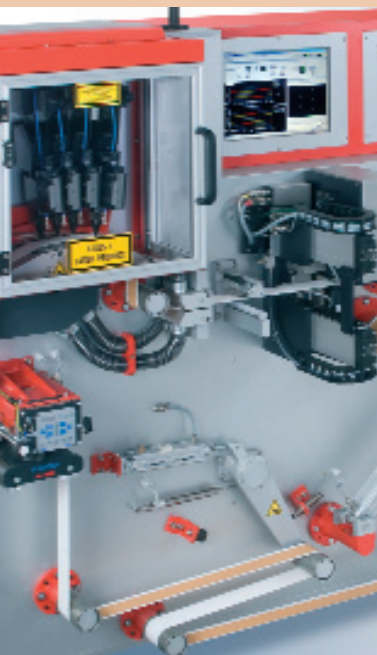
The core technology for perforating, developed by ROFIN, is a unique beam distribution mechanism, the beam multiplexer. A rotating polygon mirror delivers up to 32 perforation beams which can perforate up to 1,060,000 holes per second. Hole densities vary between 5 and 50 holes per cm and row. For maximum precision the position of each perforation head can be adjusted in steps of 0.01 mm. Processor-controlled winding motors guarantee a speed uniformity better than ± 0.5 for web speeds between 50 and 700 m/min. With this extraordinary accuracy the standard variation of porosity reaches the lowest levels available.

Reliable quality assurance with visual porosity measurement

Rising quality standards and stricter laws require substantially improved quality assurance systems. With the introduction of VPM – a device measuring the porosity of perforated tipping in Coresta Units in real-time at max. 700m/min, ROFIN provides an extremely reliable quality assurance tool for laser and electrostatic perforation systems. ROFIN's patented technology yields rich information: porosity per hole dimensions and the overall porosity of the perforation zone are calculated and displayed. Since the system calibrates itself, the results are extremely accurate.

ROFIN BAASEL
is the Inventor of
laser perforation machines for
cigarette tipping paper

Latest laser technology with minimum maintenance costs and lowest gas consumption



Easy to operate

A product family for all volumes



PerfoLas



PerfoLite



PerfoLab



PerfoLas - High Throughput Perforation

With up to 4,000 W laser power and 16 or 32 perforation heads PerfoLas is designed for high production volumes. The system perforates and cuts up to 4 bobbins in parallel which means 480,000 holes per second, respectively 1,060,000 holes per second with ROFIN's custom made Dual PerfoLas version.

PerfoLite - Compact Solution for Medium Batch Sizes

Based on the same technology as PerfoLas but with less power and 8 perforation heads and up to 150,000 holes per second PerfoLite is ideally suited for small and medium batch production.

PerfoLab - Smaller Volume Production and Evaluation

PerfoLab offers the same hole quality as its bigger siblings. With 4 perforation heads and up to 85,000 holes per second it is designed for smaller production volumes and evaluation of new perforation designs in laboratories.

Approved and Tested Components

All PerfoLas systems use ROFIN's industry standard-setting CO₂ slab laser sources. The laser operates with only a few extremely durable components and does not need conventional gas recirculation – leading to a considerable reduction of maintenance and service. The gas bottle, integrated in the laser head, lasts for up to 15 months.

SOLUTIONS FROM A SINGLE SOURCE

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Specifications

	PerfoLab	PerfoLite	PerfoLas
CO₂ Laser (10, 6)	100 W/200 W	1000 W	1500/2000 W
Perforation unit			
Perforation rows	up to 4	up to 8	up to 16 or 32
Hole diameter	50 - 200 µm	50 - 300 µm	50 - 400 µm
Holes per row&cm	5 - 50	5 - 50	5 - 50
Holes per second	up to 85,000	up to 150,000	up to 480,000 (1,060,000 optionally)
Porosity	50 - 1000 CU	100 - 1200 CU	100 - 4000 CU
Variation	2 < variation < 5	2 < variation < 5	2 < variation < 5
Winder (servomotor)			
Speed (up to)	50 - 400 m/min (= up to 6.7 m/sec.)	50 - 600 m/min (up to 10 m/sec)	50 - 700 m/min (up to 11.7 m/sec)
Acceleration	< 2 to 400 m/min	< 2 to 600 m/min	< 2 to 700 m/min
Speed uniformity	< +/- 0.5%	< +/- 0.5%	< +/- 0.5%
Rewinding quality	+/- 0.15 mm	+/- 0.15 mm	+/- 0.15 mm
Core diameter (mm)	63, 65, 66, 67, 70, 76, 100, 120 (options)	63, 65, 66, 67, 70, 76, 100, 120 (options)	63, 65, 66, 67, 70, 76, 100, 120 (options)
Bobbin	1	1	1 > 2.4
Paper width	25-80 mm	25-80 mm	25 - 270 mm
Paper length	4000 m	4000 m	4000 m (< 12.000 m max. diam. 750 mm)
Rewinding bobbin	4000 m	4000 m	4000 m
Max. bobbin diameter	400 mm	450 mm	450 - 800 mm
Changeover time	2 min	2 min	3 min
Control unit	PC 104 modul, real time information	PC 104 modul, real time information	PC 104 modul, real time information
Polygon	gold plated	gold plated	gold plated
Facettes	52	26	13 (high power version polygon)
Frequency	50 - 400 Hz	50 - 700 Hz	50 - 1100 Hz
Additional information			
	laser can be used for 16,000 h	gas consumption < 0.15 l/min	gas consumption < 0.15 l/min
Bottle contains 1,500 NI	up to 25,000 h	1 bottle lasts for 1 - 1.5 years (3 shifts)	1 bottle lasts for 1 - 1.5 years (3 shifts)

LASER MICRO

ROFIN-BAASEL Lasertech GmbH & Co. KG

Petersbrunner Str. 1b
82319 Starnberg
Phone +49(0)8151-776-0
Fax: +49(0)8151-776-4525
Email: co2systems@baasel.de