Pixel CO_2 for ENT Procedures

Alma Lasers™ | Surgical

THE POWER OF *Precision*

Laryngology • Bronchoscopy • Phrenology • Snoring
Tonsillectomy • Oral Surgery • Otology
Turbinectomy • Nasal Cavity • Head & Neck

The Alma Pixel CO_2 surgical laser brings unparalleled precision and innovation to the fields of surgical otolaryngology and oral surgery. Alma's CO_2 laser offers the ability to perform minimally invasive, highly precise surgery suitable for a wide range of treatments for conditions of the ear, nose and throat as well as of the oral cavity.

Supporting a wide variety of applications, accessories and surgical tools, and adaptable to most surgical microscopes, Alma Pixel CO_2 optimizes treatment results and opens the door to new possibilities in minimally invasive surgical care.

EXTENDING SURGICAL PERFORMANCE

- Multiple ENT and oral indications
- Reduced treatment time
- Layer-with-layer ablation by LiteScan
- Surgical precision
- Minimally invasive
- Safe for delicate areas

Alma Pixel CO_2

The Alma Surgical Pixel CO_2 system features advanced computerized precision CO_2 laser technology for ENT and oral surgical applications. Using light energy emitted by a carbon dioxide laser, the Pixel CO_2 laser achieves char-free tissue ablation, vaporization, incision, excision and coagulation of soft tissue.

With layer-by-layer ablation and variable depth penetration, the system offers high surgical precision and treatment control, maximizing treatment efficiency and minimizing tissue damage.

Supporting Pixel CO_2 laser accessories and scanning devices extend surgical performance and flexibility, allowing surgeons to access and treat complex, delicate anatomical structures.

Benefits

- Precise surgery
- Bloodless dissection
- Minimal instrumentation
- Char-free precise scanner ablation
- Quicker recovery & less pain
- Minimal damage to adjacent normal tissues

Cut & Coagulate with Perfect Control

The CO_2 laser is well-known for its versatility and safety benefits in surgical applications due to its precise depth of penetration, reduced lateral thermal effect, and excellent coagulation effect.

Harnessing these benefits for the treatment of delicate areas, Alma Pixel CO_2 combines **cutting and coagulation** into a single setting. The two modes work synergistically, allowing physicians to perform both actions without having to switch accessories during procedures.

In "cut" (ablation) mode, the pulse emits high peak power, causing immediate ablation of tissue up to the epidermis-dermis junction. In "coagulation" (thermal) mode, the pulse emits modest power and longer pulse duration, conducting heat beyond the epidermis-dermis junction, causing blood vessels and tissue to shrink.

This dual action pulse allows surgeons to achieve optimal results with faster treatment times, minimal bleeding and reduced patient downtime.

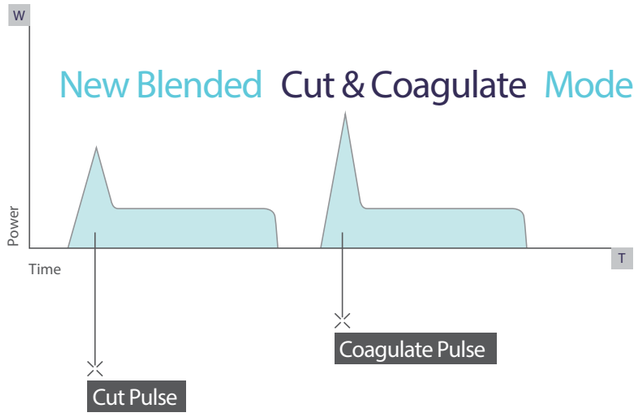
Surgeons may select from two modes of laser delivery, depending on the procedure.

Repeat Mode (default): produces short pulses of high laser energy. This mode is effective for cutting and vaporizing tissue.

Pulse Mode (single pulse): produces a single pulse of laser energy, for slower, more supervised energy delivery.

Smart, User-friendly interface
The Alma Pixel CO_2 is designed with smart, user-friendly features and quick set-up capabilities. A touch screen LCD display provides step-by-step operating instructions and indicates correct accessories and scanning patterns for each treatment objective.

The system optimizes procedures by offering pre-set operation and laser delivery parameters and allows users to configure custom parameters and patterns of injury (ablative vs. fractional ablative) for specific indications. These settings may also be saved for future procedures.



Indications

Laryngeal Microsurgery:
+ Polyps and laryngeal papilloma
+ Vocal cord nodules and polyps
+ Benign neoformations
+ Hyperkeratosis laryngitis
+ Scar tissue
+ Granulomas
+ Leukoplachia and erythroplasia
+ Primary laryngeal tumors
+ Laryngotracheal stenosis

Otology:
+ Benign and cancerous lesions on the external ear
+ Myringotomy
+ Tympanic membrane
+ Otosclerosis

Oral Surgery:
+ Leukoplachias
+ Erythroplasias
+ Papillomas
+ Hemangiomas
+ Benign & malignant lesions
+ Snoring
+ Choanal atresia
+ Tonsillotomy & tonsillectomy
+ Tonsil ablation
+ Frenectomy
+ Halitosis

Nasal, Endonasal & Endoscopic Sinus Surgery:
+ Turbinate hyperplasia
+ Removal of nasal obstructions (e.g. stenosis)
+ Recurrent nasal polyps and cysts
+ Rhinophyma
+ Cheloids and hypertrophic scars

Head & Neck:
+ Resection of benign and cancerous tumors in sub-facial and neck areas

Delivery Systems

LiteScan

The LiteScan surgical scanner is a handheld microprocessor-controlled laser flash scanner, designed for use in a variety of ENT and oral applications. It optimizes procedure efficiency by automatically setting the laser beam parameters required for each indication. In addition to char-free superficial ablation and vaporization, the system may also be used for incision or excision of tissue.

LiteScan offers full control of laser dwell time, shape patterns and power density at every point of the treatment area, maximizing physician control over patient outcome. It is ideal for tonsil ablation through scanning, partial tonsillectomy, and when combined with the 200mm oral probe, oral cavity treatments.

Surgical 100mm/50mm/200mm Focusing Handpieces

Fixed focus handpieces of varying focal distances and spot sizes allow for precise and accurate soft tissue cutting:

Focal distance	Spot size
50mm	0.125mm
100mm	0.20mm
200mm with focus/defocus	400 micron

50/100 mm Handpiece

200 mm handpiece

ENT Accessories

Nasal Kit- with a special optics set consisting of:

+ 120º attachment (150mm)
+ 90º attachment (80, 150mm)
+ 0º attachment (150mm)
+ Brush for attachments

Delivery Systems

TruSpot Micromanipulator + CVD + Scanner

Alma's TruSpot micromanipulator features an integrated high-accuracy scanner that allows for precise CO_2 laser surgery under direct microscopic guidance. TruSpot incorporates a Continuously Variable Defocus (CVD) optical system for adjusting the spot size, and a joystick for controlling the laser beam position at the target site. The micromanipulator is designed to obtain significantly smaller laser beam spot sizes (200-300 microns) for precise microsurgery at various working distances. The TruSpot achromatic and coaxial laser beam brings high quality of accuracy to its perfection. The ability to use lower laser powers and the quick laser energy delivery mechanism allow for char-free tissue ablation and predictable, repeatable vaporization at a microscopic level.

TruSpot offers full control of laser dwell time, scanning/shape patterns and power density at every point of the treatment area, maximizing physician control over patient outcome. It is ideal for use with procedures requiring microscopic precision, including treatment of Larynx and Oral indications.

TruSpot Technical Specifications

Mirror-based, achromatic confocal. Fully coaxial with microscope optical axis.

Working Distance	Spot Size
200mm	0.16 to 2.8mm
250mm	0.19 to 3.2mm
300mm	0.21 to 3.7mm
350mm	0.24 to 4.1mm
400mm	0.27 to 4.6mm

Oral Accessories

VSS (Variable Spot Size) 1-4mm handpieces:

Allow physician to manually change the spot size during the procedure without interrupting treatment.
Oral Pharyngeal Kit - 200mm handpiece, including Backstop and Straight tips.

VSS handpiece

Alma Pixel CO_2 Technical Specifications

Output	
Laser Type	Sealed-off, RH-excited CO_2 laser
Laser Type	10,600 nm, infared

CW (Continuous Wave) Mode	
Laser Output Power	Up to 30 watts (30W model system)
	Up to 40 watts (40W model system)
	Up to 70 watts (70W model system)

Modes of Operation
Continuous, Pulse, Repeat and Super Pulse Modes

Scanners	
Litescan	Scanner handpiece
TruSpot	Mechanical joystick control Micro manipulator
Working distance (CVD)	200-450 mm

Surgical Focusing Handpieces	
Focal Distances	50/100/200mm