

SmartXIDE² TRIO

The only
THREE IN ONE
ENT Laser Platform



DEKA
Innate Ability

SmartXIDE² TRIO

Unique, TRIO

The accuracy of scanner-assisted CO₂ laser
and the flexibility of CO₂ and diode lasers

DEKA
Innate Ability





CO₂ Laser
Articulated Arm



CO₂ Laser
Hollow Fibre



Diode Laser Module
Fibre

SmartXIDE² TR|



CO₂ Laser Hollow Fibre

To get to the most difficult-to-reach areas.



Diode Laser

An additional wavelength (980 nm) to expand the range of available procedures.





CO₂ Laser Articulated Arm

connectable with:

- Electronic scanning systems, for extremely precise, safe and reproducible treatments
- High Precision micromanipulators
- Dedicated handpieces with various focal lengths and integrated smoke suction channel

RF excited CO₂ Laser source and PSD[®] technology

The SmartXide² Trio RF-excited CO₂ Laser source offers high power and speed of action.

The newest PSD[®] (Pulse Shape Design) technology, utilizing both of these features, generates variable peak pulses with different structure, duration and power to adapt to the various clinical conditions. This makes the SmartXide² Trio CO₂ laser systems extremely versatile for the various surgical applications, especially for ENT surgery. U-Pulse ("Ultrapulsed" - Fig. B) and "Real CW" pulses are the most commonly used in this kind of surgery.

U-Pulse is the perfect pulse for ENT microsurgery because a massive energy is supplied in microseconds, ensuring a perfect ablation without tissue carbonisation.

The "Real CW" emission modality has no acoustic effect and is therefore suitable for the "ONE SHOT" stapedotomy technique.

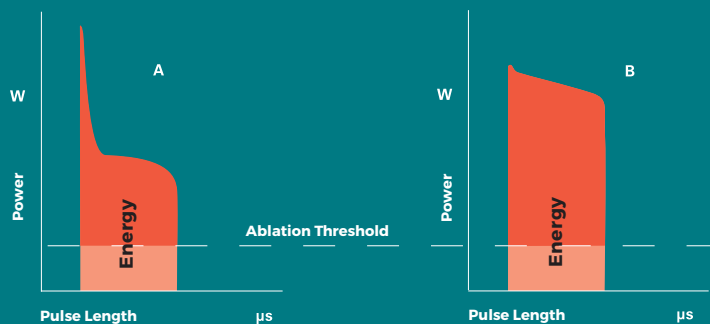
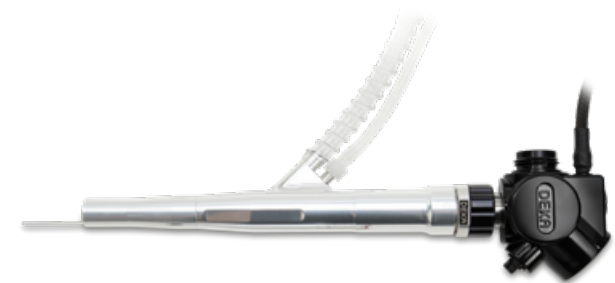


Fig. A: Single-pulse continuous-supply excited laser CO₂ (Superpulse emission).

Fig. B: Single-pulse radiofrequency excited laser CO₂ (Ultrapulse emission). Radiofrequency-excited CO₂ laser sources produce greater energy above the ablation threshold (red colour) compared to continuous-supply excited CO₂ lasers, and at comparable pulse length.



EasySpot Hybrid + HiScan Surgical

Take it Easy

DEKA Scan-Assisted ENT Laser Microsurgery:

- **Minimal thermal damage** to perilesional tissues (less than 50 microns).
- **No carbonisation**, cleanliness of cutting edges.
- **Control on cutting length ablation area**, treatment **depth and coagulation** (%).
- 2 working modalities: “**Depth**” and “**Power**”.
- Software-guided procedure for **both focusing and laser beam centration**.

SAFETY
REPRODUCIBILITY
EASY TO USE



Easy Control

Operate without ever moving your eyes from the microscope.

4 functions controlled by the exclusive microswitch joystick:

- Scanning shape **rotation** (step-by-step and fast).
- Ablation figures **dimension adjustment**.
- **Scan-ON/Scan-OFF**.
- Laser beam **Centering adjustment**.

Easy Field

- **Mechanical control of the working area** to precisely confine the laser beam within the operating field. Easy and safe.

Easy Focus

- **Hybrid technology** focusing system (holographic lens and high-reflectance mirrors).
- **Single-ring focus/defocus** system with focal point memory.
- High depth focus with **exact correspondence between the guide light and the CO₂ laser**.





Easy Plug

- Fast connections and internal wiring.

HiScan Surgical

- **Ultra fast** laser beam **movement** (100 millionths of a second), minimum dwell time.
- High-precision **scanning shapes**, with **size of up to 6.3 mm** for tissue cutting and ablation.

The Greatest Range of Scanning Shapes for Surgery:

- Line
- Circle arches up to complete circle
- Filled circle
- Filled hexagon
- Double interpolated ellipse
- Spirals for **ONE SHOT** stapedotomy



Endoscan

Miniaturised scanning system used with handpieces for free-hand surgery, such as oropharyngeal surgery. The multi-function key enables precise centering and the ability to either activate or deactivate the scanner for vaporization or cut functions (Scan-ON/Scan-OFF function).



Handpieces

SmartXide² TRIO offers a broad range of handpieces with different focusing lenses, spacers and mirrors for perfect operation in all applications. A dedicated Air inlet allows for airflow to keep lenses safe from dust and debris particle accumulation. The integrated smoke channel allows for smoke extraction at the tip of the 1.5", 2", 4", 5", 7", 8" EFL and collimated handpieces. The 4", 5", 7" and 8" EFL handpieces can be used with the dedicated scanning system (EndoScan). A special 2" ("SLIM CUT") handpiece, indicated for free-hand precision cutting, is also available.

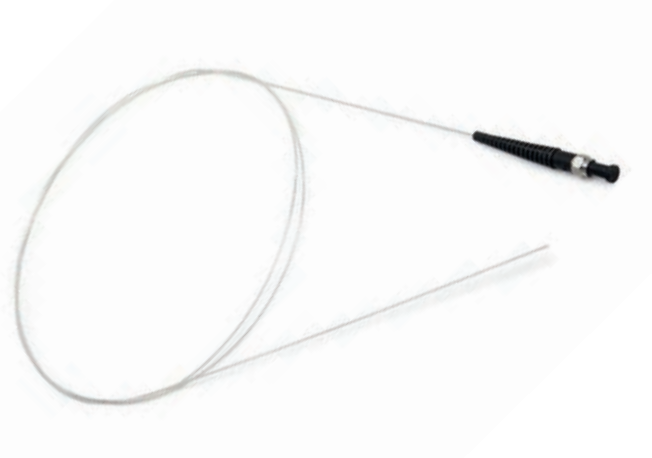


"SLIM CUT" cutting handpiece

Flexible Delivery

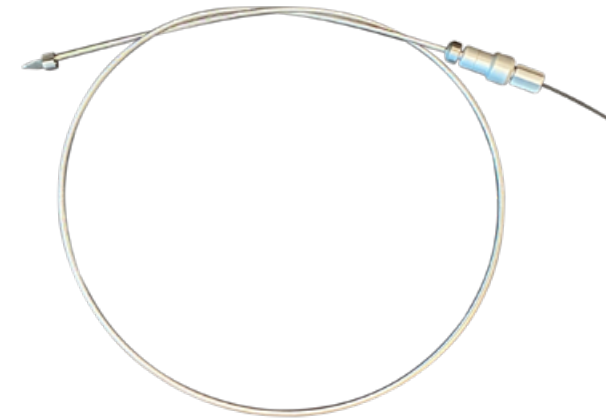
SmartXide² TRIO works also in areas that are normally difficult to reach thanks to its "flexible delivery accessories" for both the CO₂ and diode lasers.

The hollow fibre CO₂ laser cutting precision and the greater coagulative properties of diode laser are available today in a single platform that meets all surgical needs in the ENT speciality.



CO₂ Hollow Fibre

CO₂ hollow fibre can be used with handpieces of various shapes and lengths, rigid or malleable with either spatula or flat tips - whatever the surgeon's preferences/needs, for open Endoscopic and Robotic Surgery.



Spatula or flat tips



High Power Diode Laser

The diode laser and fibre delivery system allows the surgeon to operate easily, even in the hardest conditions

The use of diode lasers is well known in ENT. Moreover, the flexibility of fibre optics allows users to easily reach internal areas such as the middle ear (**“ONE SHOT” stapedotomy**) and the nose (turbinates). The diode laser system can also be integrated into the SmartXide² TRIO at anytime, as part of an optional upgrade to the system. A broad selection of fibre core diameters is available, from 200 µm to 600 µm single-use or up to 10 times reusable (to reduce cost).



200 µm



300 µm



400 µm



500 µm



600 µm

“ONE SHOT” Stapedotomy technique with diode laser fibre

Up to a few years ago, “ONE SHOT” laser stapedotomy had to be performed only with micromanipulators and scanning systems.

Today the same minimally-invasive technique can be performed with a fibre delivered diode laser with high-power and low time of emission.

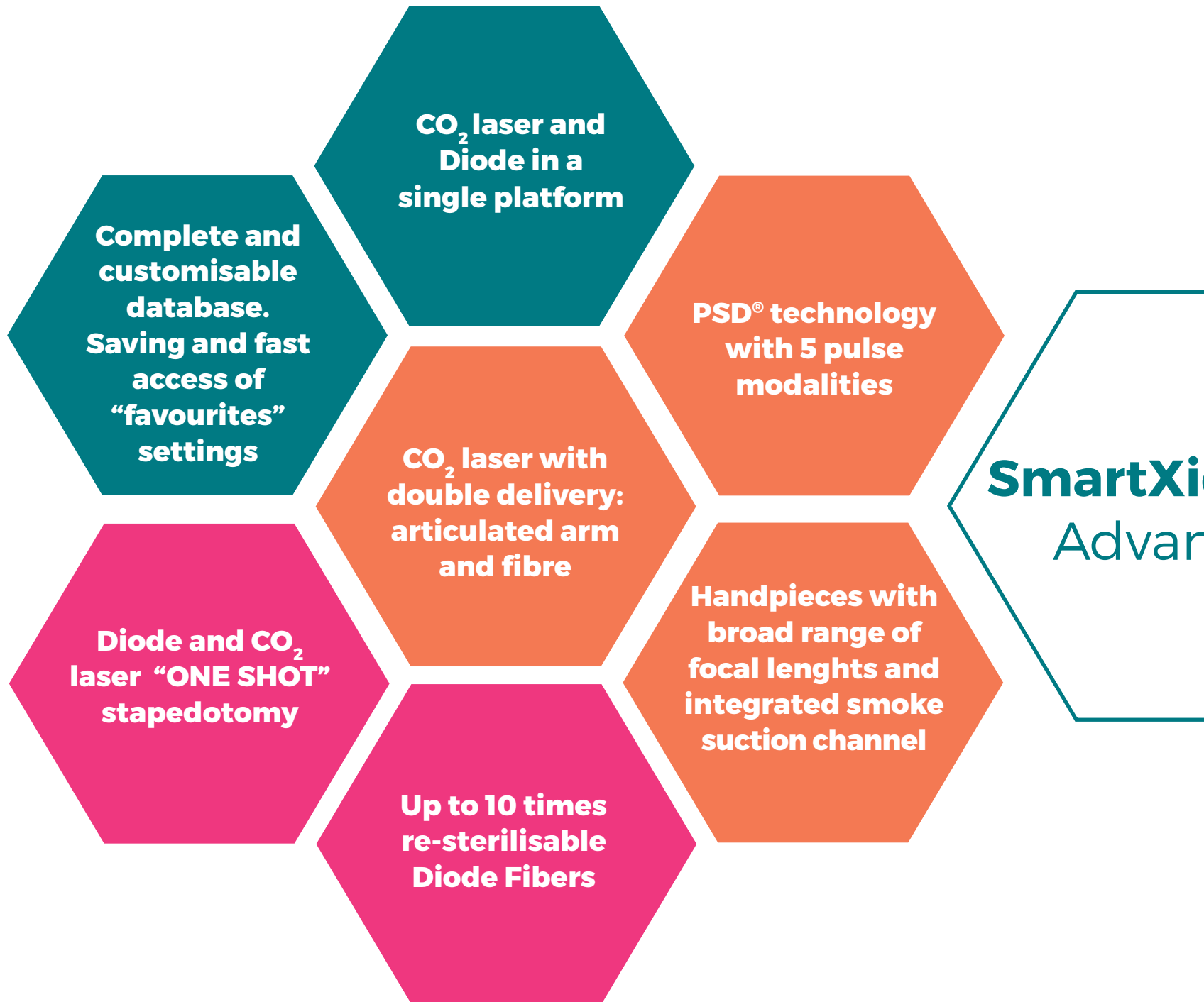
Dedicated retrievable database protocols set the laser energy necessary to make the plate hole with a single pulse, ensuring operative simplicity, safety and precision.



Bibliographic References:

1- A.M. Poletti et. al. The “One Shot” Diode Laser Stapedotomy: Photomedicine and Laser Surgery Volume X, Number X, 2015

2- S. Dallari: Video Atlas of Middle Ear Surgery Minerva medica ed. 2018



SmartXIDE² TRIO Advantages

Regulation of the maximum working field of Micromanipulator's Joystick

Micromanipulator with Hybrid technology. Perfect correspondence between laser Aiming beam and CO₂ laser

Exclusive software guided procedure for focusing and centering

The broadest range of scanning shapes for surgery

4 Micromanipulator's Joystick controlled scan functions

Micromanipulator with Easy focalization and focal point memory

"DEPTH" and "POWER" operative modes

The technological solution for all ENT treatments - CLINICAL CASES



Left vocal cord polyp



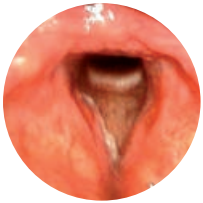
3 months Follow-up



Squamous cell carcinoma (T3)



6 months Follow-up



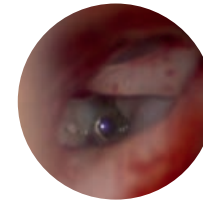
Squamous cell carcinoma (T1a)



12 months Follow-up



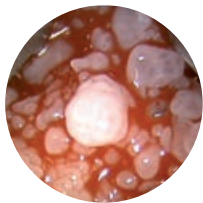
"ONE SHOT" stapedotomy with CO₂ laser



"ONE SHOT" stapedotomy with diode laser

Courtesy of **Stefano Dallari, M.D.**
Director of the Department of ENT Surgery,
Ospedale di Fermo (Hospital of Fermo, Italy)

Courtesy of **Arturo Mario Poletti, M.D.**
Consultant - Department of ENT Surgery,
American Hospital Dubai (UAE)



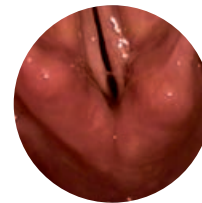
Recurrent respiratory papillomatosis



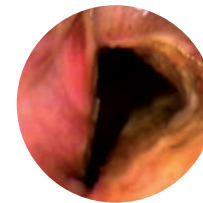
After removal of the papilloma (obvious glottic stenosis)



11 months Follow-up (after 4 procedures)



Bilateral paralysis of the vocal cords (after total thyroidectomy)



Posterior cordotomy



6 months Follow-up

Courtesy of **Guillermo Campos, M.D.**
Director - Instituto de Laringología Consultant - Department of Surgery,
Fundación Santa Fé University Hospital, Bogotá DC, Colombia

The Experience of Professionals

“

I've been using diode laser for stapedotomies since the end of the 1990s. It's very easy to use, safe and makes the surgical procedure faster. I started with 940 nm and switched to 980 nm, which I prefer. The main characteristic of 980 nm is that it's partially absorbed by water, therefore the perilymph, although not its main target, acts as a backstop and therefore does not produce any heating of the inner ear. The main characteristic of the "One Shot" stapedotomy is the supply of highly concentrated energy on the bone in a brief exposure time, thus preventing temperature increase of surrounding tissues.

Since 2007, with this technique, I have performed hundreds of procedures and most patients have a long follow-up with good results. The "One Shot" diode laser technique significantly simplifies the surgical procedure, especially when compared to traditional techniques such as the use of manual perforation and microdrill which are not selective and precise on the delicate structures of the inner ear. ”

Dr. Arturo Mario Poletti

Consultant - Department of ENT Surgery,
American Hospital Dubai (UAE)

“

The DEKA CO₂ laser, with progressive scanning technology, makes surgery on delicate tissues, like vocal cords, easier and safer. This is a wonderful tool for selective reconstruction procedures of the airways, with a series of significant advantages that go from ablation depth control, to reduced thermal damage, to lower dependence on the imprecise movements of the surgeon's hand. ”

Dr. Guillermo Campos

Director - Institute of Laryngology
Consultant - Department of Surgery,
Fundación Santa Fé University Hospital,
Bogotá DC, Colombia

“

Thanks to the precision and replicability that only scan-assisted CO₂ laser microsurgery can offer, the new HiScan Surgical scan system, along with the Easyspot Hybrid micromanipulator, has significantly simplified the performance of delicate and complex surgical procedures such as transoral larynx surgery and laser stapedotomy. ”

Dr. Stefano Dallari

Director of the ENT Surgery Unit
Ospedale di Fermo, Italy



Suggested ENT Configurations

Type of laser	CO ₂ RF - PSD®
Wavelength	10.6 µm
Laser emission mode	TEM00
Emission modes	CW - SP - DP - HP - UP
CW power	From 0.5 to 60 W
SP power	From 0.1 to 15 W
DP power	From 0.2 to 15 W
HP power	From 0.1 to 15 W
UP power	From 0.5 to 60 W
Exposure time	From 0.01 to 0.9 seconds
Delay time	From 0.1 to 5 seconds
Transmission system	7-mirror articulated arm with counterweight or flexible hollow fibre.
Guide light	High Quality Diode laser @ 635 nm - 4 mW Intensity can be regulated, from 2% to 100%. Diode function OFF during emission (DOWL).
User database	About 150 pre-set, protocols, updatable with USB / unlimited saving of user parameters / possibility of saving customisable protocols.
Control panel	10.4" LCD colour touchscreen
Accessories*	Flexible hollow fibre for CO ₂ laser. High Power Diode laser @ 980 nm - Max. power 50 W. HiScan Surgical scan system. EasySpot Hybrid micromanipulator. Endoscan scanning system. Broad range of surgical handpieces.
Power supply	From 100 to 120 Vac - 50/60 Hz From 220 to 230 Vac - 50 Hz / 1600 VA
Size and weight	cm 167 (A) x 59 (L) x 56 (P) - 100 Kg (with closed articulated arm).

* Optional.

CO₂ Hollow Fibre

Length	200 cm
Diameter	500 µm (internal) - 1 mm (external)
Power	40 W (Max)
Emission modes	CW - SP - DP - HP - UP
Accessories	Handpieces of various shapes and lengths, hard and soft
Insufflation air	Can be used with filtered internal system air and with hospital air.

High Power Diode Laser

Wavelength	980 nm
CW power	50 W
Emission modes	CW and PW
Exposure modes	Continuous, single impulse, burst or repeated burst
Emission time in PW (Ton)	From 5 to 2000 ms
Emission delay time in PW (Toff)	From 5 to 2000 ms
Burst impulses in PW	From 2 to 50
Delay between bursts	From 0.5 to 5 seconds
Transmission system	200 µm, 300 µm, 400 µm, 500 µm and 600 µm fibre optics, single-use or resterilisable up to 10 times, with chips, SMA 905 connector.

Endoscan

Maximum size	5 mm @ 300 mm EFL, 6.3 mm @ 400 mm
Dwell time	From 100 to 1000 µs
Scanning system	Cutting (tip), circle, ball
Emission modes	CW - UP

HiScan Surgical Scanning System

Max scanning area	6.3 mm x 6.3 mm @ 400 mm EFL
Dwell time	From 100 µs to 45 ms
Scan depth	From 0.2 to 2 mm
Scan modalities	Power Mode and Depth Mode
Scanning shapes	Lines, circle arches up to a complete circle, spiral, ball, hexagon (progressive and interlaced scan).
Emission modes	CW - UP

EasySpot Hybrid** Micromanipulator

Optics technology	Holographic lenses and mirrors (Hybrid)
Spot dimension	Min 140 µm - Max 4.5 mm
Work field @ 400 mm EFL	Min 20x18 mm - Max 55x40 mm
Joystick-regulated functions	Rotation and size of scanning shapes, Scan, On/Scan Off, fine centration.

**Can be used with all surgical microscopes.

This brochure is not intended for US market.

ATTENTION - Visible and invisible laser radiation. Avoid exposing eyes and skin to direct or diffuse radiation. Class 4 laser appliance



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DEKA Innate Ability

DEKA, a spin-off of the El.En. Group, is a leader in the design and production of light laser systems for medical applications. DEKA markets its appliances in over 80 countries through a network of distributors in international markets and with direct branches in France, Japan and the USA. DEKA produces laser devices in compliance with Directive 93/42/CEE specifications and in compliance with the ISO 9001 and ISO 13485 quality system.

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