SMARTXIDE HS

DEKA Robotic Technologies: Enhancing the Art of Surgery

ENT Microsurgery and Surgery
Colposcopic Gynaecology

SmartXide HS: Technological Excellence at the Service of the Professional
The use of the CO\textsubscript{2} laser has greatly enhanced operating methods in the field of ENT microsurgery and colposcopic gynaecological surgery. The mini-invasive CO\textsubscript{2} laser surgery, backed by advanced technologies, offers significant advantages over traditional techniques. The professional expertise of the surgeon, combined with innovative and robotised systems such as SmartXide HS, guarantees excellent results while reducing hospitalisation and enhancing patient comfort.

A world leader in technological excellence, DEKA has designed SmartXide HS in line with criteria of simplicity, practicality and mini-invasiveness. SmartXide HS: micrometrical precision guaranteeing microsurgical excellence.

### SMARTXIDE HS: POWER, PRECISION AND AUTOMATION OF THE MOVEMENT

<table>
<thead>
<tr>
<th>6</th>
<th>Scanning shapes adjustable in size and rotation: lines, circle curves (up to a full circle), spirals, hexagons, clover.</th>
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<tr>
<td>2</td>
<td>Operating modes: Depth Mode and Power Mode.</td>
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<td>4</td>
<td>Scanning functions located on the joystick which allow the physician to work without ever taking his eyes off the operating microscope: rotation and size of the ablation figures, scan on/off, beam centering.</td>
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<tr>
<td>2299</td>
<td>Dwell times selectable in Power Mode (from 200 μs to 300 ms).</td>
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<td>25</td>
<td>Specific ENT and Gynaecology protocols.</td>
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<td>ESLA Technology</td>
<td>Electronic Scanner Laser Ablation: technology that makes it possible to control ablation depth and coagulation percentage during the incision.</td>
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Years of working alongside professionals and researchers have made it possible for DEKA to design a state-of-the-art CO₂ laser system. The operating excellence of SmartXide HS stems from a combination of the most exclusive technologies: the scanner with incorporated HiScan Surgical management, the EasySpot micromanipulator and SmartPulse technology act in synergy to facilitate the performance of all photoablative treatments while ensuring minimal invasiveness.

Simplifying Microsurgery to Enhance the Patient’s Quality of Life

The technological excellence of SmartXide HS makes it possible to treat numerous pathologies with mini-invasive methods, thus meeting the demands of patients for safer and more comfortable treatments and methods.

Greater Insight with Scanner-Assisted Microsurgery

HiScan Surgical with ESLA (Electronic Scanned Laser Ablation) technology makes it possible to control the ablation depth and the coagulation percentage during incision. It also enables regulation of the energy density emitted and the dwell time of each spot on the tissue. The beam, moved by a dual-galvanometric scanner designed and patented by DEKA, passes into the optical zoom of the EasySpot micromanipulator where it is focused in microscopic spots.

HiScan Surgical generates the scanning shapes most appropriate for microsurgical operations:

- Point
- Line
- Circle curves up to a full circle
- Spiral
- Hexagon (progressive or interlaced)
- Clover
The synergic combination of DEKA’s software and the micrometric implementation system with the HiScan scanner and EasySpot micromanipulator makes it possible to:

- Perform more accurate and well-defined incisions,
- Control the depth and the percentage of coagulation on each scan,
- Carry out ablations with single, repeated and continuous scan.

Two different operating modes make it possible to select the most suitable function for incision and ablation of tissues:

**Depth Mode** - giving priority to the incision depth  
**Power Mode** - giving priority to the scanning speed

The DOWL (Diode Off While Lasing) function is extremely practical, since the operating field can be controlled more effectively while using the laser.

**Remote Control: Continuous and Total Control**

The microswitch, located on the joystick, allows the physician to control all the main scanning functions without ever taking his/her eyes off the operating microscope.

The joystick makes it possible to:

- control the rotation and size of the ablation figures
- instantly select the Scan Off/On mode
- accurately set the centring of the beam using accessories.
EasySpot has been designed by DEKA for a precise purpose: to offer specialists a specific instrument for operating in maximum safety even on areas where the utmost precision and accuracy is crucial. Thanks to the combination of EasySpot and HiScan, DEKA assists and facilitates the specialist’s difficult task, offering a technology that is intuitive, simple and above all easy to manage using the remote control joystick. The main controls and functions can be easily managed without the specialist taking his eyes off the operating field.

DEKA has also enhanced HiScan Surgical and EasySpot with several technological systems that make SmartXide HS even more ergonomic and versatile:

**EasyField System.**
The progressive mechanical adjustment of the maximum operating field offered by this system offers total control of the laser beam also within a restricted operating field, without the risk of losing its position.

**EasyFocus System.**
Focusing and defocusing operations are ensured by a single ring-nut equipped with mechanical locking of the selected focal point.

**EasyPlug System.**
Simple connections and internal wiring optimise the design and operation of the device.

Variation of surgical techniques in treating laryngeal tumours (From: E. De Campora et. al. “La laser chirurgia endoscopica nel trattamento dei tumori glottici”. Final report from LXXXVIII National Congress SIO – Genoa (Italy) – 2001)
THE TECHNOLOGICAL SOLUTION FOR ALL ENT TREATMENTS

The applications and advantages of CO$_2$ laser in ENT are numerous and well-known. Tools such as the micromanipulator and scanner, that enable the use of automated cutting and ablation methods, make this instrument an indispensable ally for surgeons in reducing risks and solving all ENT problems.

SmartXide HS, with the EasySpot micromanipulator and scanner, Surgical HiScan, is the new Gold Standard for laryngeal microsurgery for use in innumerable applications such as:

- Corpectomies and cordotomies
- Laryngeal polyps and papillomas (including widespread papillomatosis)
- Cord nodules
- Benign neoformations
- Reinke's oedema
- Laryngocele
- Hyperkeratotic laryngitis
- Cicatricial gangues
- Granulomas
- Congenital diaphragms
- Leukoplakia and erythroplasia
- Primary laryngeal tumours
- Surgery following unsuccessful radiotherapy
- Paralysis in adduction of the vocal cords
- Laryngotracheal stenosis
- Laryngeal Amyloidosis.

In Otology, complex operations like Stapedotomy can also be performed.

With its special accessories, SmartXide HS is also perfect for use in other sectors, such as oral, pharyngeal, nasal, tracheobronchial and external surgery, the ideal instrument for excision and ablation of the tissues in cases of:

- Leukoplachias
- Erythroplasias
- Papillomas
- Haemangiomas
- Tumour surgery (e.g. glossectomy)
- Zenker's diverticulum
- Choanal atresia
- Laser Assisted Uvula Palatoplasty – LAUP
- Tonsillectomy and tonsillectomy
- Turbinate reduction
- Septoplasty
- Removal of nasal obstructions, polyps and synechiae
- Rhinophyma
- Cheloids and hypertrophic scars
- Stenosis, nodules, polyps and tumours of the Tracheobronchial tree
- Resection of tumours in sub-facial and neck areas
- Ablation of lesions of the skin and mucosa
- Otoplasty.

(Courtesy of S. Dallari MD. ENT Department, Fermo Hospital - Italy.)
In Gynaecology, the colposcopy-guided SmartXide HS, together with the EasySpot micromanipulator and HiScan Surgical scanner, makes it possible to safely and effectively treat the majority of pathologies of the lower female genital tract. This surgery is mini-invasive and offers significant advantages over other techniques. The versatility of this system allows the operator to use both the excision and ablative scanning methods. By reducing to a minimum anaesthesia, vasoconstrictors and above all, thermal damage to the healthy tissues, there are enormous benefits for the surgeon, coupled with a fast, safe post-op recovery with no side effects or scars for the patient.

Applications in Colposcopic Surgery:

- Cervical, vaginal, vulvar, and anal acuminate condylomas
- Cysts and abscesses of Bartholin's glands
- Cysts of the mucosa
- Various degrees of CIN up to invasive carcinomas or at the initial stages (IA1)
- Pathologies of the fornix and cupola: VAIN, endometriosis, vaginal endometriosis, condylomatosis
- VIN
- Bowen's disease, Queyrat's erythroplasia, Bowenoid papulosis
- Leukoplachia (vulvar dystrophy)
- Polyps
- Perivulvar and perianal fistulas
- Endoanal pre-cancerosis.

Vulvar Excision

Vaporization for LSIL

Conization for HSIL

 Courtesy of Prof. C. Penna MD, M.G. Fallani MD. Department of Gynecology and Obstetrics, Colposcopy and Laser Therapy Office. Careggi University Hospital - Florence, Italy.
TECHNICAL DATA

SmartXide HS and SmartXide_50 HS

<table>
<thead>
<tr>
<th>Laser Type</th>
<th>CO₂</th>
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<tbody>
<tr>
<td>Wavelength</td>
<td>10.6 µm</td>
</tr>
<tr>
<td>Emission Mode</td>
<td>CW - PW - SP</td>
</tr>
<tr>
<td>Maximum Power (CW)</td>
<td>30 / 50 W</td>
</tr>
<tr>
<td>Maximum Power (SP)</td>
<td>15 / 25 W</td>
</tr>
<tr>
<td>Peak power</td>
<td>320 / 400 W</td>
</tr>
<tr>
<td>Repetition Rate (PW)</td>
<td>From 5 to 100 Hz</td>
</tr>
<tr>
<td>Pulse Duration (PW)</td>
<td>From 0.2 to 80 ms</td>
</tr>
<tr>
<td>Beam Delivery</td>
<td>Articulated arm with 7 mirrors and counterweight</td>
</tr>
<tr>
<td>Aiming Beam</td>
<td>Diode laser 5 mW @ 635 nm</td>
</tr>
<tr>
<td>Control Panel</td>
<td>LCD Colour Touch Screen</td>
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</tbody>
</table>

Accessories (optional)

HiScan Surgical scanner system
EasySpot micromanipulator
A wide range of handpieces is available and designed for different surgical applications.

Electrical Requirements

230 Vac / 1.8 A (50-60 Hz)

Dimensions and Weight

144/160 cm (H) x 48 cm (W) x 55 cm (D), 38/43 kg

HiScan Surgical Scanner System

Maximum Scanning Area 6.3 mm (400 mm EFL)
Dwell Time From 200 µs to 300 ms
Ablation Depth (selectable for every single scanning passage) From 100 µm to 2 mm
Scanning Modes Power Mode, Depth Mode
Scanning Shapes Point, Line, Circular curves until forming a complete circle, Spiral, Hexagon (progressive and interlaced scanning), Clover

EasySpot Micromanipulator

Focal Length From 200 mm to 400 mm
Spot Sizes Min. 140 µm (200 mm EFL) Max. 4.5 mm (400 mm EFL)
Operative Field (400 mm EFL) Min. 20x18 mm – Max. 55x40 mm
Functions Controlled by Joystick Rotation and dimensions of ablation figures, Scan-off/Scan-on, Fine tuning of centering.

Adaptable to the most diffused surgical microscopes.

This brochure is not intended for the market of USA.

ENT MICRO SURGERY AND SURGERY - COLPOSCOPIC GYNAECOLOGY

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DEKA The Code of Excellence
A spin-off of the EL.En. Group, DEKA is a world-class leader in the design and manufacture of lasers and light sources for applications in the medical field. DEKA markets its devices in more than 80 countries throughout an extensive network of international distributors as well as direct offices in Italy, France, Germany, Japan and USA. Excellence is the hallmark of DEKA’s experience and recognition garnered in the sphere of R&D in over thirty years of activity. Quality, innovation and technological excellence place DEKA and its products in a unique and distinguished position in the global arena. DEKA manufactures laser devices in compliance with the specifications of Directive 93/42/EEC and its quality assurance system, certified by , is in accordance with the ISO 9001 and ISO 13485 standards.

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