



**ABOUT US:**

Lysistech AG and its partners strive for innovative development, production and marketing of medical equipment, especially laser systems and radio-frequency systems for minimally invasive surgery. Our products range from generators to the corresponding fibre-optic laser probes and radio-frequency (RF) plasma probes.

As one of the leading providers of the most diverse and wide-ranging laser and RF therapies, the Lysistech is particularly committed to the constant development and improvement of medical treatment techniques, giving top most priority to safety and cost-efficiency.

With premium-quality laser and RF systems and all the related equipment, Lysistech gives you the opportunity to broaden and optimise the range of treatments you offer in order to ensure the highest levels of patient satisfaction. Lysistech offers you unique solutions that allow you to focus fully on the treatment of your patients.

**WHY LYSISTECH?**

*Lysistech stands for the solution (or lysis) of medical challenges.*

-Product Development Team at Lysistech-

Our clients' satisfaction is the main focus of all our actions. Along with our suppliers, we ensure that all our products are always of excellent quality.

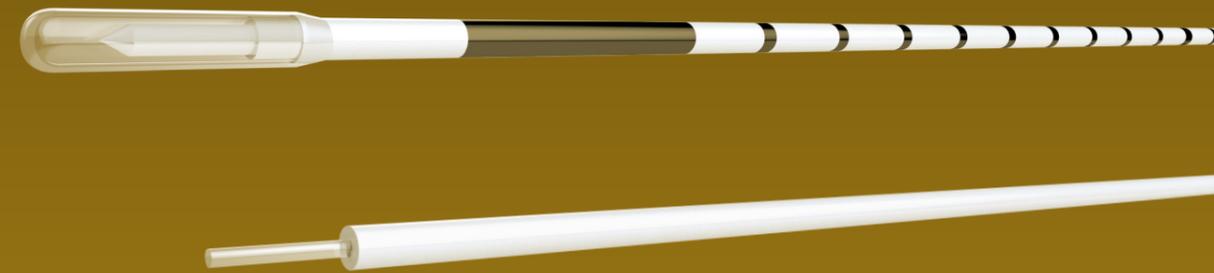
Based on this deep cooperation, we are able to adjust our products to the individual requirements of our partner hospitals, consistently optimising the user-friendliness and effectiveness of our portfolio. This way of doing business allows us to continually set new milestones in the area of minimally invasive surgery.

**Our Product Range for Laser Treatment**

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# The Technology

## HOW LASER ABLATION WORKS

### Thermally-induced Laser Ablation

Laser ablation is clinically used to remove or ablate tissues! The energy of photons is first transferred to the electrons of the solid body (organic molecules). In the process, the electrons may reach very high temperatures; this energy induces the thermal vibration of the atomic nuclei. This means that the electrons leave the solid body, which causes a Coulomb repulsion of the remaining positive ions (Fig. 1)! At cellular level, this manifests as tissue ablation.

In our minimally invasive treatment units, optical fibres conduct a pulsed diode laser beam into the body. In contrast to continuous laser irradiation (Fig. 2 B), the thermal exposure of surrounding tissue can be minimised by using a pulsed laser (Fig. 2 A).<sup>4</sup>

The different wavelengths allow for targeted and low-impact tissue ablation. Wavelengths in the range of 980 nm are absorbed by the highly hydrated tissue environment and are therefore particularly effective in PLDD interventions on the intervertebral disc.<sup>3</sup> Wavelengths in the range of 1470 nm usually target highly hydrated endovenous walls rather than haemoglobin-rich environments (Fig. 3). This facilitates effective treatment in phlebology. Moreover, the absorption spectrum of the saline solution allows efficient cooling during laser treatment of varicose veins.<sup>2</sup>



Fig. 1 A typical organic molecule (protein) is disintegrated by the absorption of laser energy!<sup>1</sup>

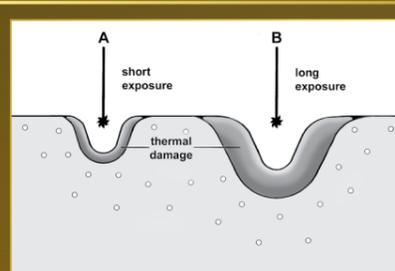


Fig. 2 In contrast to continuous laser irradiation [B], the thermal exposure of surrounding tissues can be minimised by using a pulsed laser [A].<sup>4</sup>

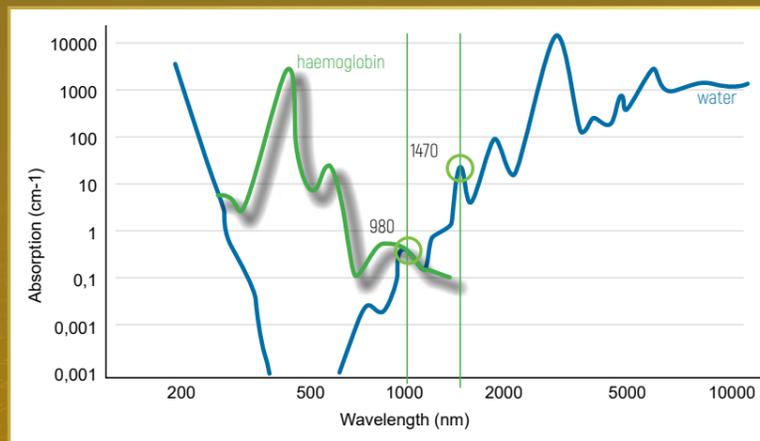


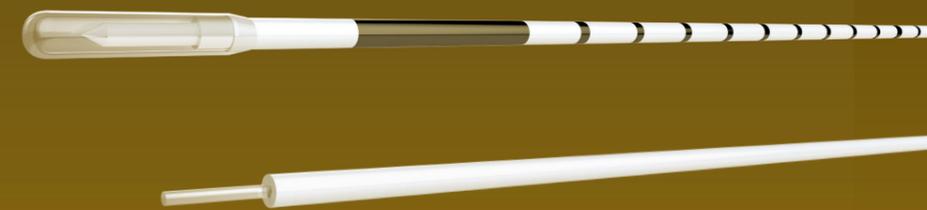
Fig. 3 Absorption characteristics of haemoglobin and water in relation to wavelengths of 980 nm and 1470 nm.

# The Technology

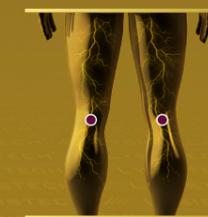
## STANDARD FEATURES OF OUR LASER FIBRES



- Connector with SMA 905 ferrule
- Packaged in double sterile bags
- Sterilised with ethylene oxide
- Sterility shelf life of 5 years
- High mechanical reliability
- All materials tested in accordance with ISO 10993 (Biocompatibility)



## POSSIBLE APPLICATIONS OF THE LASER TECHNOLOGY:



TREATMENT OF VARICOSE VEINS IN THE LEGS



LUMBAR DISC HERNIATION



## OUR LASER TREATMENT PRODUCT RANGE:

### 1 SOFT IN VEIN™



Ring lens probe catheter

Indication: varicose veins/varicosis/varices

Optimised for diode laser systems (1470 nm)

1. Radial emission fibre: 400 µm (slim) or 600 µm
2. SMA905 standard connector
3. Protective cap
4. Extension connector
5. Fibre kink protection
6. Polyester heat-shrink tubing
7. Silica capillary dome OD: 1300 µm (slim) or 1800 µm

### 2 STRONG IN SPINE™



Nucleotomy probe catheter

Indication: PLDD (Percutaneous Laser Disc Decompression)

Optimised for diode laser systems (980 nm)

1. Laser surgery fibre: 320 µm
2. SMA905 standard connector
3. Protective cap
4. Extension connector
5. Fibre kink protection
6. Silicone tubing OD: 2 mm

\* Available with 20 cm or 25 cm free-standing fibre end.

## TREATMENT UNITS:

### SOFT IN VEIN™ (REF LSFCS000193 or LSFCS000194)

1 x ring lens probe catheter (sterile)

1 x introducer set 6F or 7F (including scalpel, sterile)

### STRONG IN SPINE™ (REF LBFF000032)

1 x nucleotomy probe catheter (sterile)

1 x coaxial interventional cannula (sterile)

1 x haemostasis valve (sterile)

#### CONSUMABLES FOR VARICOSE VEINS

Ultrasound gel + cover (sterile)	10 pcs.	REF 1238-02
Dispenser DP disposable tube set (sterile)	10 pcs.	REF 6022
Introducer set 6F (sterile)	5 pcs.	REF ISO2
Introducer set 7F (sterile)	5 pcs.	REF ISO3

#### CONSUMABLES FOR PLDD

Coaxial interventional cannula (176/15 cm)	20 pcs.	KIR17/15
Coaxial interventional cannula (176/15 cm)	20 pcs.	KIR17/15:45
Coaxial interventional cannula (176/20 cm)	20 pcs.	KIR17/20
Haemostasis valve (sterile)	10 pcs.	YCK112a

### 3 DIODE LASER SYSTEMS

#### ELLI 1470™ (REF LF01.004)

Wavelength: 1470 nm

Maximum power: 15 W

Fibre compatibility: 200/400/600 µm

Pulse length: 10 µs-3 s

SMA905 connector

Colour display with touch function



#### ELLI 980™ (REF LF01.025)

Wavelength: 980 nm

Maximum power: 30 W

Fibre compatibility: 200/400/600 µm

Pulse length: 10 µs-3 s

SMA905 connector

Colour display with touch function



## References

1. Knappe, V., Frank, F., & Rohde, E. (2004). Principles of lasers and biophotonic effects. *Photomedicine and laser surgery*, 22(5), 411-417.
2. Rathod, J., Taori, K., Joshi, M., Mundhada, R., Rewatkar, A., Dhokane, S., & Gour, P. (2010). Outcomes using a 1470-nm laser for symptomatic varicose veins. *Journal of Vascular and Interventional Radiology*, 21(12), 1835-1840.
3. Yin, J., Han, Z., Guo, B., Guo, H., Zhang, T., Zeng, Y., & Ren, L. (2015). Comparison of the ablation ability of nucleus pulposus after 1,064 nm Nd: YAG laser and 980 nm diode laser radiation. *European Journal of Orthopaedic Surgery & Traumatology*, 25(1), 59-62.
4. Beer, F., Körpert, W., Passow, H., Steidler, A., Meinel, A., Buchmair, A. G., & Moritz, A. (2012). Reduction of collateral thermal impact of diode laser irradiation on soft tissue due to modified application parameters. *Lasers in medical science*, 27(5), 917-921.



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