TRANSFORMATIONAL CHANGE IN LASER THERAPY
Cube Therapy redefined for each type of patient

K-Laser Cube helps determine the perfect dosage of energy thanks to graphically intuitive menus for each variant choice.

The increased power plays an important role so that laser therapy is most effective.

Type of Pain: Acute and Chronic

Pain has been classified in many ways. It becomes chronic if, after the acute phase, the sensation of pain persists over time until it becomes a true illness; it is a pain that lasts for at least three months and that, if not properly treated with an adequate therapy, persists beyond the normal time of healing.

This condition affects the patient’s quality of life, adversely affecting the patient’s physical and mental well-being.

K-Laser Cube has studied each treatment to deal adequately and effectively with every type of pain.

The importance of melanin in the body

In addition to the body type and the tissue type, K-Laser Cube considers another critical variant: melanin content in the skin. Thanks to an innovative software, K-Laser Cube recognizes six different skin types, in relation to each variant of the preset protocols.

Body Build and Body Parts

Cube has revolutionized laser therapy since it offers the possibility to modify various parameters based on the energy to be delivered on a precise part of the body, the area and tissue types, and dividing body builds in three groups: ectomorph, endomorph and mesomorph.
Irradiating an area with a 660 nm wavelength, that the melanin in our skin absorbs very well, will ensure that a large dose of energy be delivered on the surface. Since light can both inhibit bacteria and promote cell growth, laser therapy has incredible results in wound healing and tissue regeneration.

K-Laser Cube Therapy is the world’s most innovative laser therapy as it includes the optimal range of wavelengths used in physiotherapy, delivering up to 4 simultaneously!

660nm

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905nm

Oxygen is released at varying rates from the bloodstream, and the quicker this happens, the more fuel the cell has to carry out all of its natural healing processes. This wavelength is absorbed in part by the hemoglobin, water, melanin and by the cytochrome. The more this irradiation is absorbed, the greater the quantity of oxygen available to the cells.

800nm

The terminal enzyme in the respiratory chain is cytochrome c oxidase, which determines how efficiently the cell converts molecular oxygen into ATP. This enzyme’s highest absorption is at 800 nm, cycling back and forth between reduced and oxidized states at its own pace, each cycle producing a molecule of ATP. Photon absorption speeds up this process, accelerating ATP production.

970nm

Blood is the primary transport system that brings the necessary nutrients and oxygen to the cell, and carries away the catabolic byproducts. Water in our organism absorbs this wavelength very well, and when it absorbs a photon, all of the energy is converted to heat. These deep tissue, localized hot spots, create temperature gradients at the cellular level that stimulate local micro-circulation that bring more oxygen fuel to the cells.
The Need of a more powerful laser

Common Laser Therapy literature, deals principally with the concept of peak power, which is certainly very important for high level laser therapy. In fact it is a widespread practice to express the efficacy of the laser in terms of Watt. However, most recent reviews, have evidenced the relevance of the average power delivered, as it is the only one that has a real effect on multiple pathologies. For example: some lasers operate in super pulsed modality emitting pulses with a very high peak power for short instances (millionths or billionths of a second), but delivering only a few watts of power overall.

Some of these lasers, operate at the borderline of the Therapeutic Window, such as at 1064 nm, a wavelength absorbed principally by the water in the tissues. Their effect is purely analgesic, without any real biostimulation of the tissues and the consequent production of ATP. The natural healing processes take place in the presence of the production of ATP molecules, thanks to the growth of new cells.

Intense Super Pulse Technology (from 1 to 20,000 Hz)

K-Laser Cube is the only laser which, due to its unique and exceptional ISP mode, allows you to select the right frequency modulation and the average power, even at a super pulsed mode. Therefore, one can choose from the lowest frequency of pulses, for an analgesic treatment, to the higher ones, for biostimulation, maintaining the setting for the average power independent and adjustable so that the energy delivered be the one suitable to that type of tissue. The ISP super pulse allows energy to penetrate deeper, without overheating the skin surface. With the ISP mode, one may adjust both the frequency of the pulse and the average power independently.
Ultrafast lasers, GalliumArsenide (GaAs)

- The pulse width is fixed and of approximately every centi-billionth of a second.
- Requires extremely high pulses (between 10,000 and 100,000 Hz) to emit only few milli-watts of power.
- High frequency treatments have low analgesic effects.
- A low average power fails to develop a therapeutic effect on large surfaces.

ISP K-Laser

- The pulse width is variable and controlled by K-Laser’s powerful software: it is up to 200 times wider than that of a pulsation in ultra-fast modality.
- Delivers an average power of 0.1 to 12 Watts at any frequency from 1 to 20,000 Hz
- The wide range of pulsations is able to obtain analgesic, bio-stimulatory and anti-inflammatory effects.
- High average powers are able to treat large areas of tissue.
- With the ISP mode, the operator can adjust both the frequency of the pulse and the average power independently.
- K-Laser is the sole and exclusive device equipped with ISP mode.
- K-Laser’s Intense Super Pulse modality ensures the delivery of the correct average power for the therapeutic treatments of vast areas, and a wide range of frequencies to obtain the desired effects.

Benefits of ISP mode vs. CW

- Therapeutic dosage for deeper tissue targets
- Reduced absorption by superficial tissues
- Enhanced tissue response
- Exclusive to K-Laser Cube
- High density of photons with lower average power
- High density of photons with low thermal impact
- High density of photons with reduced superficial heating
- Stimulation of tissues with a lower dosage opposed to CW
Objective of K-Laser Cube Therapy

K-Laser Cube combines its experience in the field of laser technology together with the know how in the scientific-medical field, creating a synergy that represents a major milestone in the History of Laser Medicine. The result has led to the development of medical devices increasingly efficient and versatile.

The new K-Laser Cube technology offers the opportunity to make customized programs for a single patient, offering doctors a valid and genuine support given the device’s versatility, thus making it suitable for any type of requirement. Given the ease with which one can interact, the Doctor and Physiotherapist will be able to decide the kind of treatment to be applied to their Patient, by simply choosing the area of the body that needs to be treated, the somatotype, phototype, and in a few minutes, deliver the custom therapy suitable for that patient.

Biological and physiological effects of K-Laser Cube therapy: fast and practical results

The progress in science and technology has made possible the development of the first, last generation, therapeutic laser with 4 wavelengths: K-Laser Cube 4. It is now possible to combine the bio-stimulatory, vascular and analgesic effects in a single fiber, giving rise to a true Laser Therapy.

The most recent literature has shown that K-Laser Cube has had significant, positive, biological effects, given the great amount of energy delivered in depth, improving the regeneration process of the cells, and accelerated tissue repair.

Biological effects

- Faster healing of wounds, ulcers and sores
- Reduction of the formation of fibrosis
- Anti-inflammatory and analgesic
- Enhanced vascular activity
- Speeds up metabolic processes
- Improvement of nerve function
- Immune- regulation
- Trigger point
- Healing time greatly reduced
- Excellent results in shorter treatment times

Fields of application

- Acute and Chronic Pain Management
- Sports Medicine
- Traumatology
- Physiotherapy
- Rehabilitation Therapy
- Post Surgical Therapy
- Therapy in Podiatry
- Therapy in Dentistry and Oral Pathology
K-Laser’s Research and Development Division’s crowning achievements have set the pace on new technologies and the evolution in the field of electro medical devices world wide.

Eltech has made available its latest technology, know-how and resources to world renowned research institutions and works closely with some of the most important University clinics and in particular with the Clinic for Dentistry and Stomatology at the “United Hospitals” of Trieste’s University, the International Centre for Genetic Engineering and Biotechnology “ICGB”, to develop new treatment protocols, with the introduction of the 660nm wavelength and the thorough study of the therapeutic effects in the field of stomatology of the 970 nm.

**STOMATOLOGY**

K-Laser Cube has furthered its studies in the therapy of oral disease. Dental Stomatology studies the clinical and therapeutic aspects of the pathologies affecting the mucous membrane and soft tissue of the oral cavity. Thanks to the studies carried out, important scientific articles and abstracts have been published on new treatments of the mucositis post chemo-therapy, forms of acne and perioral lesions.

Thanks to a dynamic software, easy programming of treatments, 4 selectable wavelengths, exclusive ISP mode, modulated frequency, the possibility of varying the power from “low level” to “high level” dynamically, K-Laser Cube has been able to develop specific therapies for the treatment of soft tissues and wounds of various kinds.

K-Laser Cube has widened the spectrum of applications of high level laser therapy (HLLT), by developing therapies for pathologies usually treated with low level laser therapy (LLLT), making a new contribution to laser literature.

**PODOLOGY**

K-Laser has developed a new Cube therapy for a whole new branch of medicine: Podiatry. The Podiatrist treats pain syndromes of the foot, pathologies of the nail and foot deformities and malformations.
Development of new ergonomic solutions

Given the great investments in Research and Design, K-Laser has developed new solutions able to improve the level of user-friendly devices. This attention to detail, comes from the company’s determination to create products that will revolutionize the way Physiotherapist operate making their work experience stimulating thanks to Cube’s dynamic therapies and the new Quick Release Technology.

Quick Release Technology

- Handpiece with interchangeable optics
  This technology was born from the need to perform dynamic therapies on different areas of application: from Physical to Podiatric, to Dental and Stomatologic Therapies.

- New optical fiber
  The new fiber is coated with a robust steel sheath and is 2 m long, to make the equipment easier and safer to use.

- Variable zoom from 1 to 5 cm²
  A zoom handpiece is of crucial importance to obtain better results, as it gives the possibility to adapt the handpiece to the area and part of the body to be treated according to the pathology.

- Optional Lenses: Fiber ENT, surgical optics.
  The principle of dynamic therapy has led to the development of two optional lenses that may be fitted onto the handpiece according to the different needs of the physician: ENT Fiber for Dental and Stomatology and the Surgical Optics for podiatrics.
**K-Laser Cube**

**More compact and portable**

- Light weight, about 2.86 lbs.
  Thanks to its compactness, characteristic of K-Laser’s production, and transportability, the physiotherapist can choose where to carry out the therapy; this makes of K-Laser Cube the ideal tool in the field of sports medicine, Rehabilitation and Post-Surgical.

- Rechargeable Lithium-Ion Battery
  K-Laser Cube is equipped with a rechargeable battery for more than 60 minutes worth of treatment in continuous wave.

- Full color graphic display LCD touch screen
  The liquid crystal display and full color, high definition graphics, guarantee high visibility. Furthermore, the use of touch screen technology guarantees greater interactivity between Cube and its user.

**USB interface**

- Cube software upgrades
  The K-Laser Technology foresees periodical software upgrades, in order to guarantee highest performance.

- **Electronic Therapy Records:**
  **Historical Archives Patients**
  The software comes complete with a history file of all the treatments given to an individual patient, with the possibility to customize a patient’s protocols and export them in various formats via USB.

**K-Laser Trolley (optional)**

- Lightweight, Portable and Safe
- Secures the device by means of a magnetic plate.
## TECHNICAL SHEET

<table>
<thead>
<tr>
<th>CUBE</th>
<th>CUBE 2</th>
<th>CUBE 3</th>
<th>CUBE 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Laser type</strong></td>
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<td>Semiconductor laser</td>
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<td><strong>Laser system</strong></td>
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<td><strong>Wavelength (nm)</strong></td>
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<td>660, 995</td>
<td>660, 980, 970</td>
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<tr>
<td><strong>Peak Power in ISF mode</strong></td>
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<td><strong>Average Power in ISF mode</strong></td>
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<td>8</td>
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<tr>
<td><strong>Max Power in CW (W) ± 20%</strong></td>
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<tr>
<td><strong>Peak Power in Surgical mode (W)</strong></td>
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<td>15</td>
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<td><strong>Max Power of 690nm (W)</strong></td>
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<td><strong>Emission Mode</strong></td>
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<td>CW (Continuous wave)</td>
<td>CW (Continuous wave)</td>
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<td><strong>Aiming Beam</strong></td>
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<td><strong>Optical Wireless Footswitch</strong></td>
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<td><strong>Dimensions (W x L x H)</strong></td>
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<td>Approx. 2.87 lb.</td>
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</table>

### Additional Features

- **Transportable & with rechargeable battery:** Yes
- **Emission mode:** Continuous wave (CW) 41–20,000 Hz in 1 Hz steps – ISP (Intense Super Pulse)
- **Multi-phase pro-col protocol:** Yes
- **Adjustable settings:** Yes
- **Unlimited patient data file:** Yes
- **Handpiece with adjustable zoom:** Yes
- **Interchangeable optics:** Yes
- **Surgical option:** Yes
- **Optional ENT fiber:** Yes
- **Upgradable software:** Yes
- **USB software upgrades:** Yes
- **Special protective goggles:** 2 pairs
- **Selectible wavelengths:** 3 combinations
- **Intense Super Pulse (ISP):**
  - Power: 10W, 15W
  - Average: 4W, 6W, 8W
- **Continuous wave (CW) Power:** 6W, 15W, 20W
- **Warranty:** 2 year