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DIAMAGNETIC SHOCK WAVE[®]
A Revolutionary Therapy



BUILT ON
FUTURE TECHNOLOGY

DIAMAGNETIC THERAPY

HEALTH AND SCIENCE



*PERISO mission is that of conjugating innovative ideas with the development of modern technologies, which effectively support the diagnostic and rehabilitative medicine, **without any invasive approach.***

Antonio Santoli

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OUR STRENGTH LIES ON

Research, as a strategic resource for physicians and healthcare professionals dedicated to the therapy and rehabilitation of patients. Successful applied science is our priority.

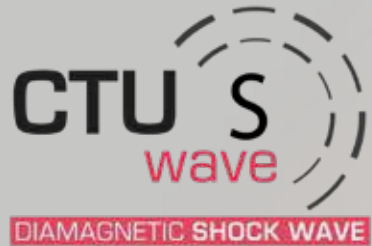
Technology, developed in complete synergy with the operator's experience, which leads us to create new tools that guarantee rapid and successful treatment in complete safety.

Innovation, carefully designed in support of human experience, and for the enrichment of training processes within the medical field, for a better relationship therapist - patient.

SHOCKWAVE THERAPY

APPLIED DIAMAGNETISM

The CTU S Wave system represents an authentic innovation in the shockwave generator field that combines therapeutic safety and efficiency with the possibility for active interaction between the generator and the tissue being treated.



The CTU Shockwave is the first shockwave generator with DIAMAGNETIC TECHNOLOGY

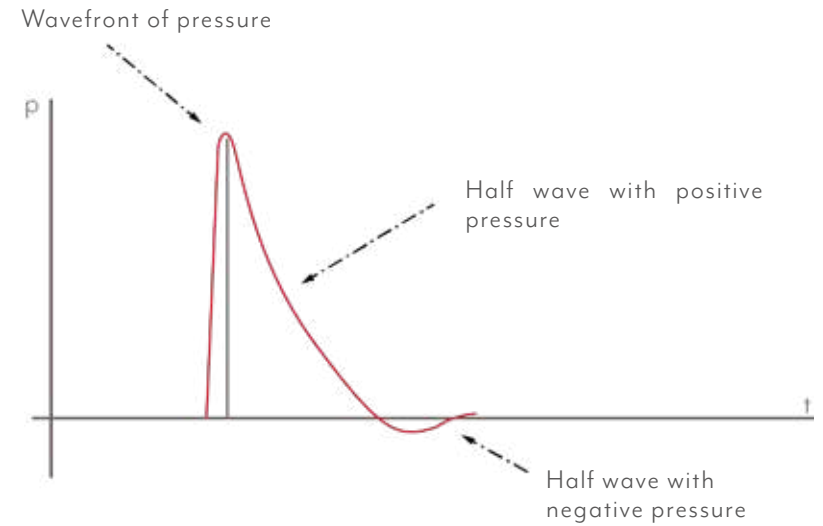


The alternation of positive and negative pressures that characterize the shockwave subjects exposed tissue to the effects of alternating **compression and traction forces.**



The effectiveness and validity of a shockwave generator depend primarily on the characteristics of focalization of the acoustic pulse, the variation of which usually **CANNOT** usually be programmed by the operator.

A shockwave is an acoustic pulse of brief duration generated by a rapid rise in pressure to a very high level known as peak pressure that subsequently descends to initial values in a negative pressure phase.



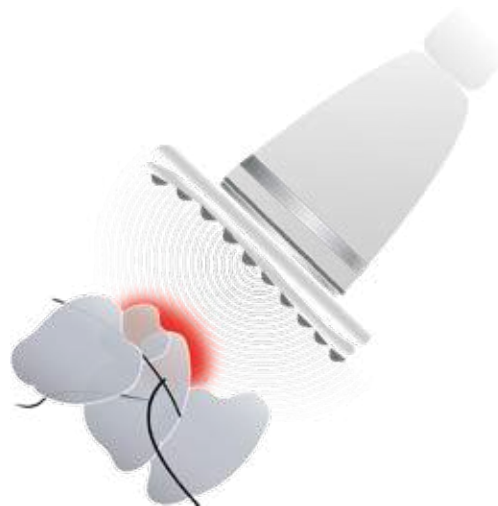
THERAPEUTIC EFFECT

A shockwave's therapeutic effectiveness depends on the mechanical loads produced by the positive half wave on the acoustic interface of the biological tissue (of variable density) and the cavitation forces induced by the negative half wave:

- Reduction of local inflammation
- Formation of new blood vessels
- Reactivation of repair processes
- Restoration of articular mobility

Traditional shockwave generators produce only one single wave shape and **do not permit the modulation and adaptation of pressure space and time gradients to the effective needs of treatment.**

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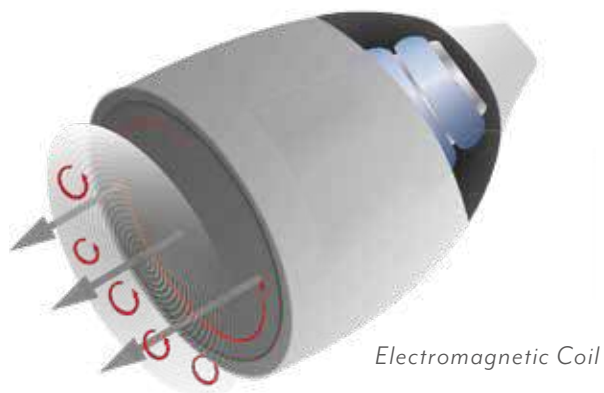
OF COURSE, BUT...

It is widely known that the limit to these devices lies in the difficulty of simultaneously modulating the focused wave's space/time gradients as required on the tissue's acoustic characteristics.

Does the CTU S Wave system permit this limit to be overcome?

DIAMAGNETIC SHOCKWAVE

*Fresnel Lenses
made of diamagnetic material*



The CTU S Wave system produces a shockwave created by the interaction of the electromagnetic coil's field flow and an acoustic lens made from a highly diamagnetic alloy. The lens undergoes a sharp acceleration that generates an acoustic pulse that lasts for approximately 0.1 μ sec. This type of shockwave is known as a DIAMAGNETIC SHOCKWAVE.

The visibility of the diamagnetic effect requires a high-intensity magnetic field, and the CTU Shockwave generator ensures the maximum benefit of the biological effects of the electric field induced by a high-intensity current of very short duration.

Yes, the CTU S Wave is equipped with a so-called diamagnetic generator that permits shockwave space/time gradients to be modified, in this way enabling the variation of both temporal and spatial focusing to therapeutic needs.

The CTU Shockwave generator applies the physics principle of diamagnetism, the characteristics of negative magnetization vaunted by certain materials which when exposed to an electromagnetic field undergo a repulsive force in proportion to the intensity of such field.

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POWER SUPPLY
50-60 HZ 230 VAC

POWER CONSUMPTION
0,37A - 85VA

STORED ENERGY
70J

PROTECTION 1
MAGNETO-THERMAL CIRCUIT BREAKER

PROTECTION 2
INTERNAL FUSE

INTER-PULSE TIME
MINIMUM 10 SEC

TECHNICAL FEATURES

CORRENT CONSUMPTION
130VA (75W)

WEIGHT
25 KG (30 KG WITH ACCESSORIES) C.A.

DIMENSIONS
48X45X121 CM

ATMOSPHERIC PRESSURE
FROM 700 TOA 1000 HPA

ROOM TEMPERATURE
FROM 10 °C TO 30 °C

OPERATING ENVIRONMENT HUMIDITY
FROM 30 TO 75% (NON-CONDENSED)

The **CTU S Wave** is built of wear-proof components unlike similar devices on sale. It also features an added pair of settable dials with two different focuses to emit energy suited to different aesthetic treatments.

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Digital Display
Touch Screen

Handpiece
with Fresnel lenses



DIAMAGNETIC GENERATOR

TEMPORAL FOCUSING | SPATIAL FOCUSING

TEMPORAL FOCUSING

Variation of the quantity of energy that can be emitted per unit of time on the basis of the characteristics of the tissue's acoustic impedance, elasticity, and absorbance.

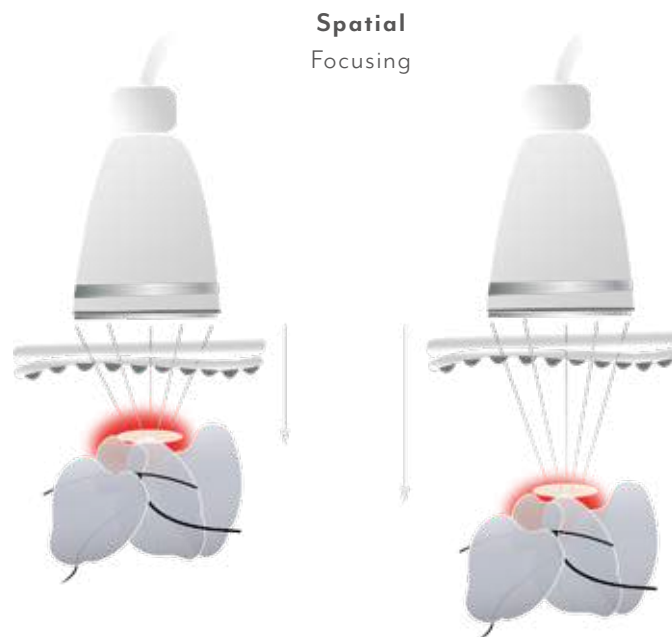
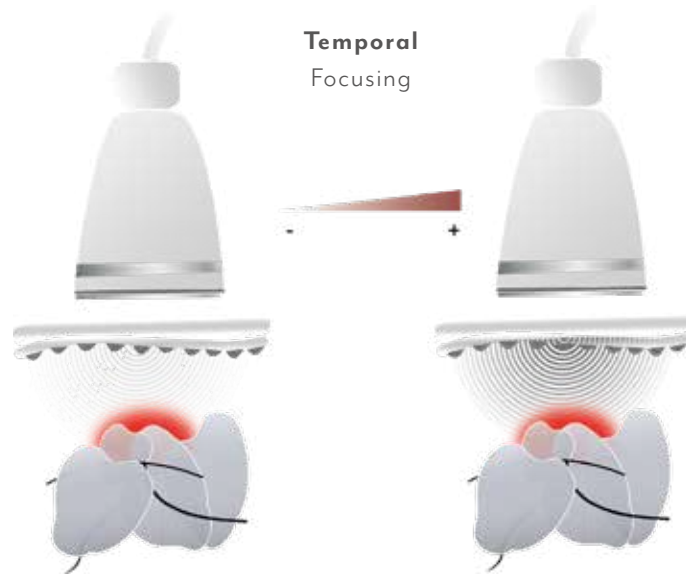
SPATIAL FOCUSING

Variation of the quantity of energy that can be obtained on the basis of the distance from the therapeutic treatment target.



Pulse adaptation. The **CTU S Wave** system permits the modification of the space-time profile of the pulses emitted as required by the anatomopathological lesion and the acoustic impedance characteristics of the tissue being treated.

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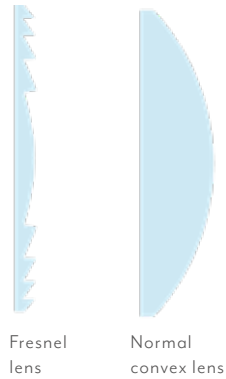
Temporal focusing adjustment possibility brings shockwave therapy higher efficiency. After determining the therapeutic target and therefore the characteristics of the tissue to be energized with precision, **the CTU S Wave permits the generation of a pulse adequate to the biological tissues' acoustic impedance.** This innovation promotes better energy absorption and greater biostimulation of cellular components as a result.

The possibility to adjust the wavefront, in other words, the time required for the pulse to rise to peak values - known as its rise time - permits the modification of the shockwave's time gradients.

TECHNOLOGICAL INNOVATION

Spatial focusing permits the specific energization of targeted tissue sections, or rather specific pressure to be applied to specific areas, **in this way preventing any part of the energy applied from interfering with the structural equilibrium of adjacent healthy areas.**

The CTU S Wave diamagnetic generator permits intervention on shockwave space gradients through the use of special acoustic lenses with pulse focalization capacity that recalls the Fresnel lens principle.



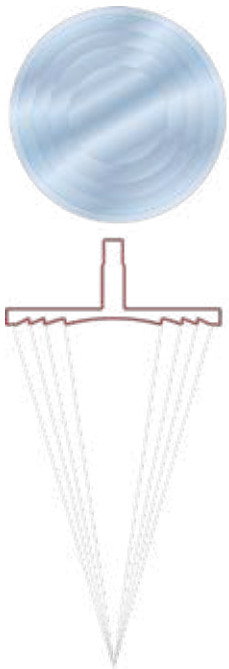
Fresnel lens

Normal convex lens

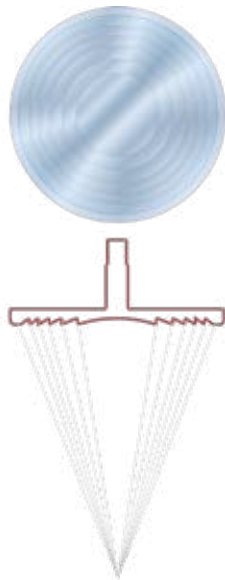
Fresnel lenses permit the construction of optics with arbitrary aperture and particular focal lengths whose dioptric power is equivalent to that of a spherical lens. This is possible by splitting the spherical lens into a series of concentric ring sections.

Pulse focalization takes place without aberrations in a three-dimensional energization area that depends on the specific shape and dimensions of the lens.

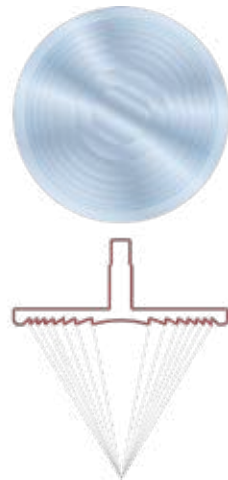
FRESNEL LENSES



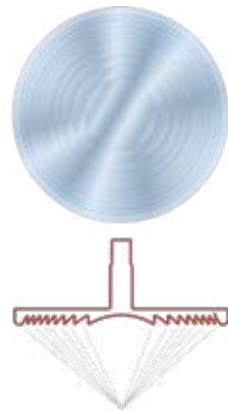
65 - focalization
depth: 5,5-6,5



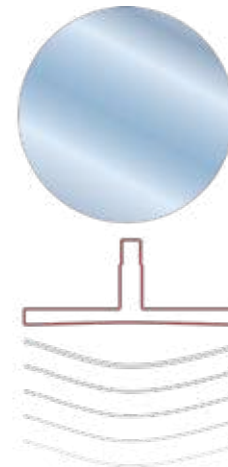
40 - focalization
depth: 3,5-4,5



30 - focalization
depth: 2,5-3,5



20 - focalization
depth: 2cm



00-defocalized

The **CTU S Wave** system uses flat lenses, whose concentric sections produce different depths of focus, apertures, and spatial geometry while maintaining the characteristics of rotating solids.

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Operation in diamagnetic mode permits shockwaves and their draining-repulsive effect to be applied also in acute stages and not only for chronic pathologies.

The CTU S Wave system permits the simultaneous modification of the quantity and speed of the energy transferred, in this way adjusting both energy flow and shockwave rise time. As in all shockwave treatments, the important thing is to correctly focus the energy in the tissue on the basis of the depth and energy of the tissue to be energized.

Pain during shockwave therapy is usually linked to the combined effect of the space/time gradient of the energy emitted by the generator used. The CTU S Wave system lets the operator instantly control and modify the shockwave's time gradient at equal emitted energy levels. This adjustment permits treatment pain to be reduced while maintaining the pressures required for the desired therapeutic effect unaltered.

1 ACUTE PATHOLOGY TREATMENT

2 EMITTED ENERGY CONTROL

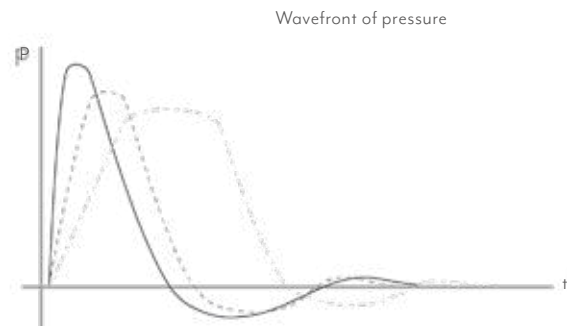
3 PAIN-FREE

The **CTU S Wave** system lets the operator control the acoustic wavefront, in this way reducing the negative pressure phase. This permits the shockwave's negative effects to be minimized and treatment to be given completely without pain.

THE ADVANTAGES OF A DIAMAGNETIC GENERATOR

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COMPLETELY PAIN-FREE THERAPY



CTU S Wave significantly reduces the following collateral effects of the half wave negative phase on biological tissue typical of traditional shockwave machines, in this way eliminating pain during treatment:

Excessive cavitation effect: formation of bubbles of gas above the therapeutic effect threshold with a simultaneous increase in the cell's permeability and consequent cellular edema, potential micro-lesions and transitory damage to cellular membrane and endocellular structures.

Overheating: part of energy is turned into heat, which is generated by the friction of shockwaves passing through cellular liquids.

Micro-streaming phenomena: the formation of eddies and flows in biological tissues that may damage them.

DIAMAGNETIC GENERATOR

PRINCIPAL ACTIONS AND THERAPEUTIC APPLICATIONS

CTU S Wave diamagnetic technology permits a remarkable extension of shockwave applications for both acute and chronic pathologies, in this way offering the chance to make a complete intervention while also significantly reducing therapy times and accelerating tissue receptiveness for a faster cure of the following:

- **Acute tendinopathies**
- **Calcific and other tendinopathies**
- **Muscle pain syndromes**
- **Epicondylitis of the humerus, radius/ulna**
- **Arthrosis (in initial phases)**
- **Enthesopathy**
- **Bursitis**
- **Carpal tunnel syndrome**
- **Patellar syndrome**
- **Fallen arches with or without spurs**
- **Achillodynia**
- **Trigger points**
- **Tibial periostitis**
- **Bone fracture mending delays**
- **Cutaneous ulcers and hard-to-heal wounds**





The **CTU S Wave** system combines the biological effects of the shockwave and those of the electric field induced by the magnetic field increased by the repulsive effect on the tissue's liquid components in order to shorten treatment times.

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Diamagnetic shockwaves permit a wide extension of shockwave applications to treat chronic and acute pathologies through the interaction of the three operative modes below:

ENERGY (EFD)

RISE (Rise Time)

DRAINAGE (DIA)

The possibility to manually adjust the wavefront allows the output of a specific pulse modulation depending on the disease, its location, intensity and the degree of energy absorption by the biological tissues targeted by the therapy.



OPERATIVE MODE

DRAINAGE (DIA)

The CTU S Wave system combines the anti-inflammatory, analgesic, and biostimulation effects of the shockwave with the liquid drainage effect worked by diamagnetism. The traces of the high-intensity magnetic field that generated the shockwave induce a repulsive force on the tissue's diamagnetic elements like water and protein, in this way obtaining a rebalancing of the intra- and extra-cellular water and solutes that makes the use of the CTU S Wave system advisable also for pathologies with effusions, swelling, and even in acute conditions. This is possible by modulating the Diamagnetic effect (DIA).

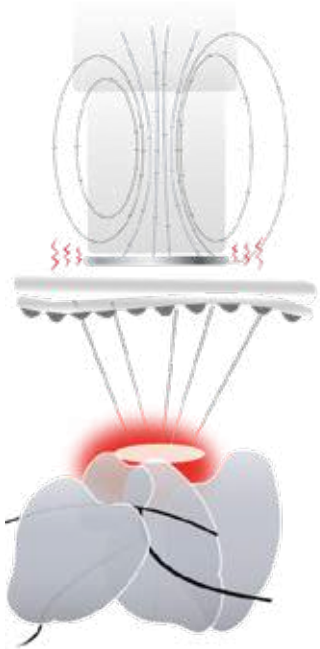
RISE (Rise Time)

The adaptation of the shockwave's envelope (time trend) to tissue characteristics represents a further therapy amplification factor, especially for the treatment of degenerative tendinopathies (calcific and otherwise) in fascial and apo-neurotic pathologies. Disgregating action is part of a wider therapy protocol with an initial preparatory tissue stimulation phase followed by operation in disgregation mode, and lastly drainage mode.

ENERGY (EFD)

The synergy of the effects of the shockwaves and the magnetic field induces a pooled biological effect by the transduction of the physical pulse into a biological response, which as demonstrated singularly for the two different forms of energy, is characterized by neo-angiogenic activation, cellular proliferation and regeneration, and the metabolic regeneration of the tissues stimulated.

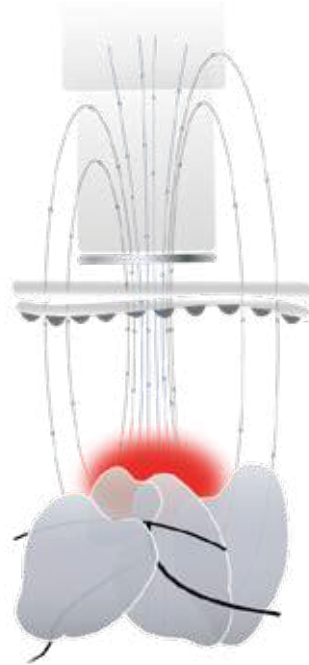
Non-DIA mode



The diamagnetic effect is used only to generate the acoustic shockwave.

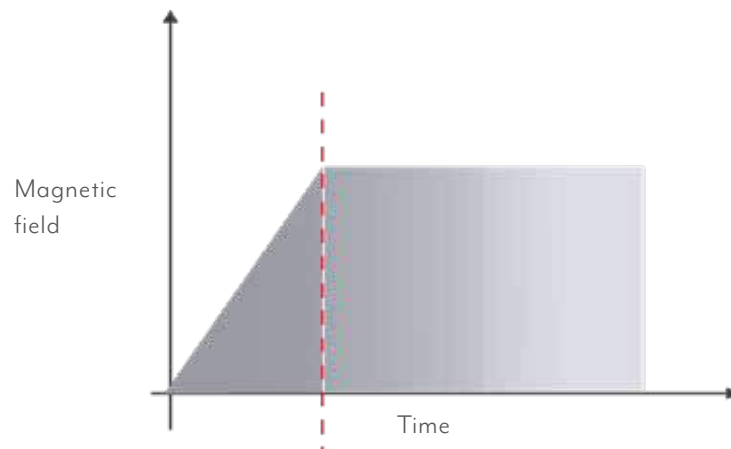
Non-DIA mode, the lens is impermeable to the magnetic field, whose energy is used only to implement the transduction of the latter into a shockwave.

DIA mode



The diamagnetic effect is used also to enhance therapeutic treatment thanks by extending the magnetic field.

DIA mode modifies the shape of the magnetic field wave in such way that the lens is permeable to it. The CTU S Wave is therefore available for use in inducing a therapeutic diamagnetic effect, and therefore drainage, pain relief, and the reduction of inflammation.



The CTU S Wave system makes administering shockwave therapy easier thanks to innovative diamagnetic technology that permits the adjustment of the power of every wave, the modulation of the wavefront, and the selection of DIA or non-DIA operative mode. The variability of these parameters guarantees painless, effective treatment.

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WELCOME TO THE FUTURE OF THERAPY.

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