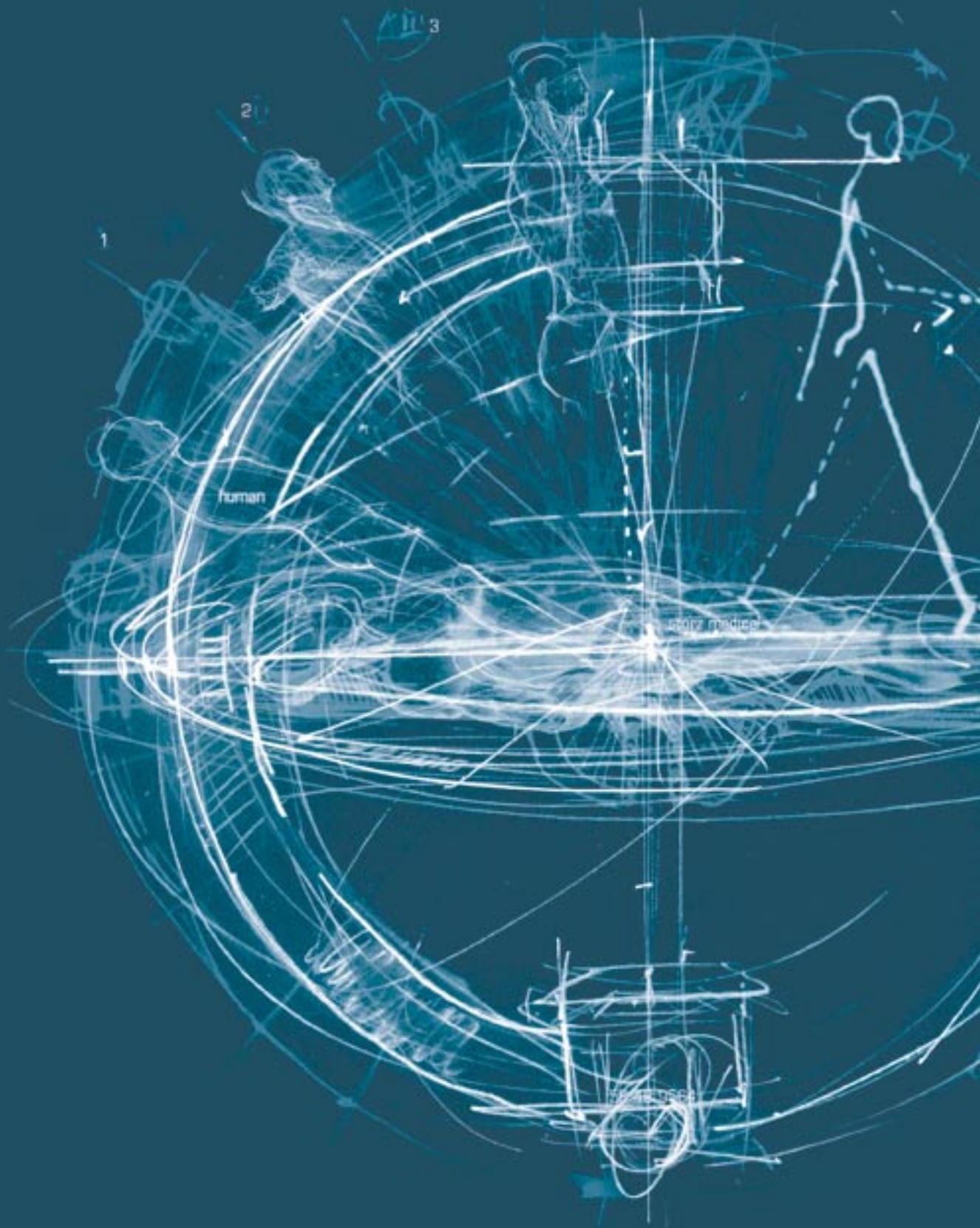


MODULITH® SLC
CARDIAC SHOCK WAVE THERAPY



OUR HISTORY

Based in Switzerland, STORZ MEDICAL AG was founded in 1987 as part of the KARL STORZ group. Our physicists and engineers made decisive contributions to shock wave technology and design of innovative medical devices.

Shock waves revolutionized urological stone treatment strategies and significantly extended treatment options for orthopaedic indications such as tendinopathia of the shoulder girdle, non-unions and others.

Based on its shock wave expertise and extensive technical and medical research the completely new field of cardiac shock wave application was developed in close co-operation with renowned medical institutions.

Non-invasive cardiac revascularization is an exciting new indication for CARDIAC SHOCK WAVE THERAPY (CSWT)

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*HUMANE TECHNOLOGY
TECHNOLOGY FOR PEOPLE*

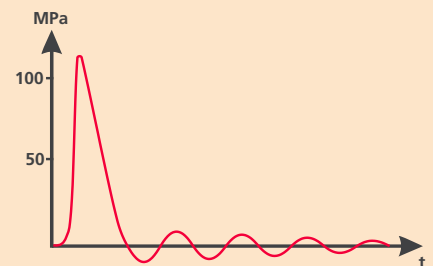
SHOCK WAVES FOR CARDIOLOGY

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Physics

Shock waves for medical use are acoustic pulse waves similar to ultrasound featuring extremely high pressure (up to 100 MPa), short rise time and low tensile wave components. Shock waves generate transient forces at acoustic interfaces and may cause cavitation which creates strong impulse forces by an asymmetric collapse of cavitation bubbles.

High energy shock waves provide the power to fragmentize kidney stones (extracorporeal shock wave lithotripsy) while soft tissue is passed basically without lesions.

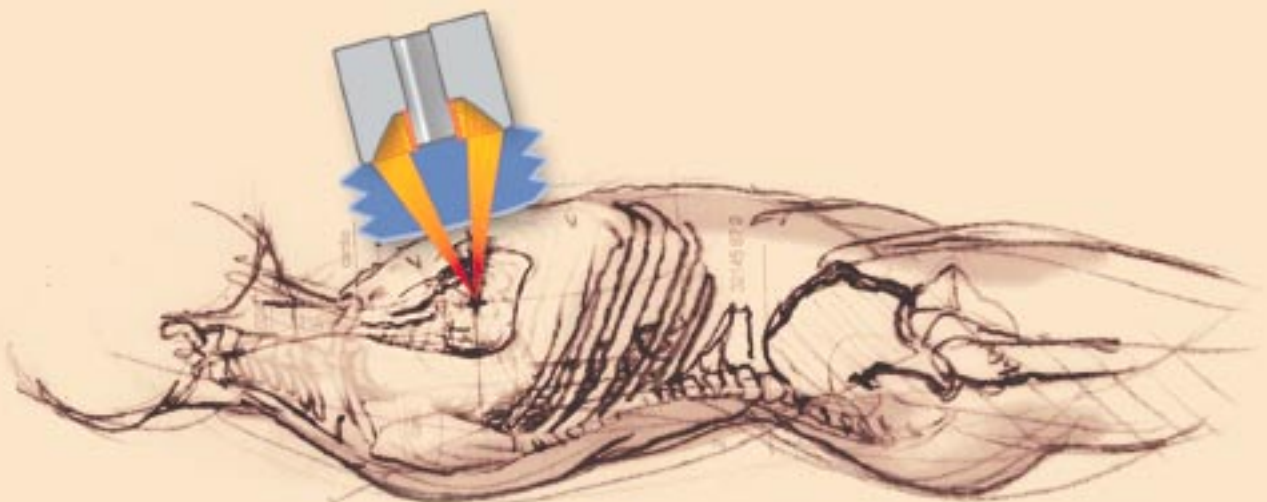


These features qualify shock waves as an ideal instrument for non-invasive agitation on selected tissue areas.

Biological effects

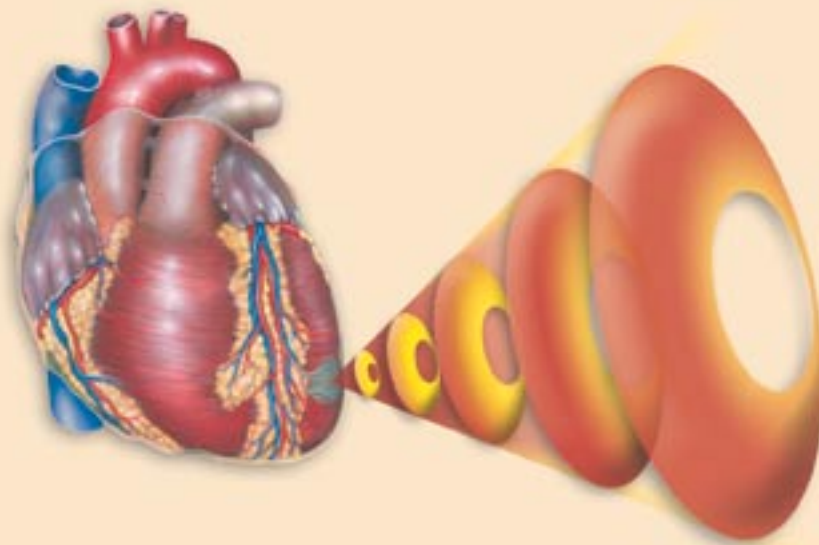
Beside fragmentation of body calculi shock waves of lower energy have proven effective in stimulation of nerve cells, metabolism, circulation and permanent pain reduction. Effective shock wave therapies could be established for various indications of chronic pain diseases such as tendinosis calcarea, plantar fasciitis, epicondylitis as well as non-unions and others.

Interactions of shock waves with living tissue are manifold: Mechanical forces at tissue interfaces related to different acoustic impedances, as well as micro-jets of collapsing cavitation bubbles are the primary effects, which, in turn, may generate NO and other free radicals. Subsequent effects are: Activation of ion channels of cell membranes, memory effects of CNS, neo-angiogenesis and release of vascular endothelial growth factors.



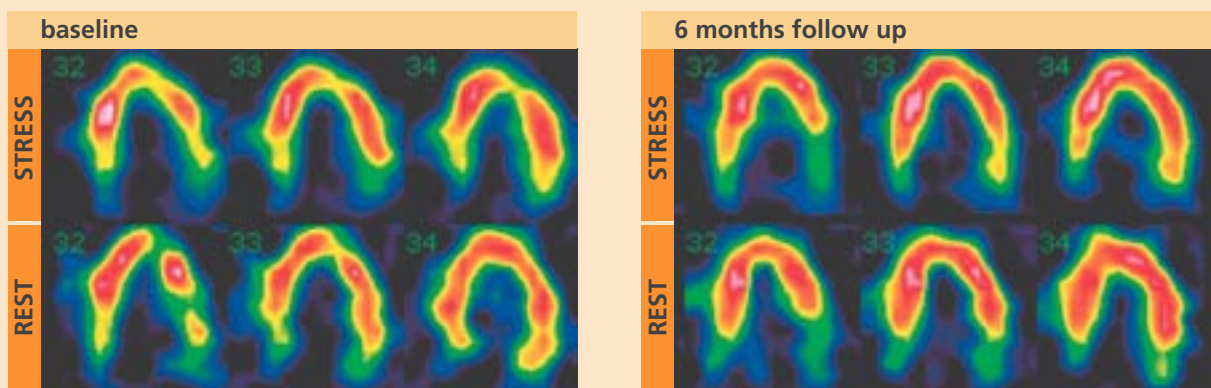
Cardiac shock wave therapy (CSWT)

Major cardiological diseases are caused by insufficient metabolism and reduced circulation of heart muscle tissue. Refractory angina pectoris is associated with reduced blood supply of localized muscle areas.



Shock waves for cardiac use are generated outside the body in a water filled therapy head and coupled to the skin via a flexible membrane. Under simultaneous ultrasound control precise focussing and scanning of predetermined target areas is performed. Shock wave pulses are released in an ECG-trigger mode only during refractory phase of the cardiac cycle. After application of several thousand pulses of low energy shock waves repair mechanisms are stimulated which result in neogenesis of small vessels. This leads to a reduction of angina and over all improvement of cardiac function and metabolism. Treatment is done without anaesthesia and pain sensation. Repeated treatment sessions enhance over all treatment efficacy which is not limited to short term results.

SPECT recordings before and 6 month after CSWT document clinical improvements*



* Department of Cardiology (Director Prof. Dr. Raimund Erbel), Centre of Internal Medicine, University Hospital of Essen, Germany

MODULITH® SLC

World's First

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Best Shock Wave Device for Non-invasive Cardiac Revascularization



MODULITH® SLC

In order to apply powerful shock waves to the heart, an uncompromised mastery of shock wave technology is mandatory. The delicate heart tissue requires total control of shock wave parameters to provide medical efficiency without causing serious side effects.

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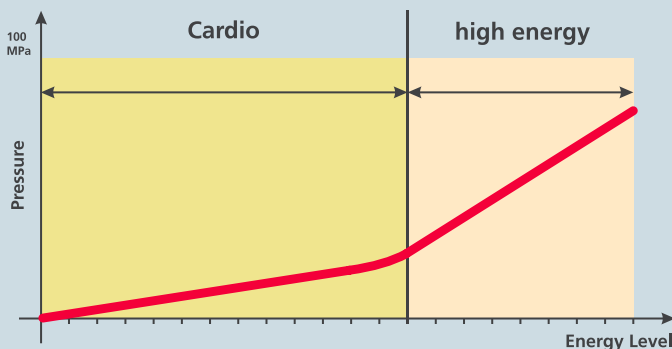
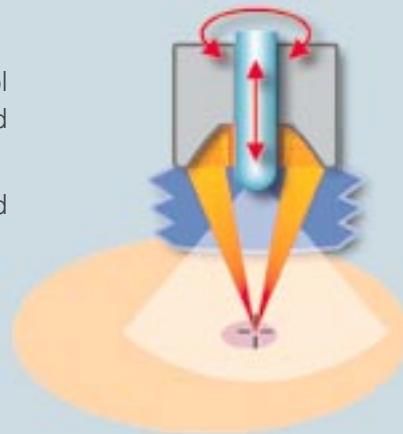
STORZ MEDICAL Solutions

Patented shock wave technology developed by STORZ MEDICAL makes use of a cylinder coil and a parabolic focussing reflector which ideally matches with the medical requirements:

In-line ultrasound imaging

Simultaneous ultrasound provides online control of positioning with superior precision compared to off-line ultrasound configurations.

The cylinder shaped generator is ideally prepared to accept an in-line ultrasound imaging device



Reproducible energy release, low and high range

Reproducible energy release, low and high range

Due to electromagnetic cylinder/paraboloid technology highest output stability is guaranteed in low as well as high energy levels.



Sophisticated Shock Wave Technology for the Ischemic Heart

Medical Requirements

- Precise control of spatial shock wave field dimensions
- Precise targeting by ultrasound
- Precise control and reproducibility of energy release
- Precise synchronisation with cardiac cycle



Precise focus

Proprietary shock wave generator technology generates precisely defined focal zones which are adjusted with millimetre-precision utilizing a three-dimensional fine positioning device.



ECG controlled shock wave release

ECG triggering provides shock wave pulses within a few milliseconds after the QRS-complex. Pulses are released only in refractory phase of the cardiac cycle.



ECG controlled shock wave release

SERVICE

Always by your side

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- **Site planning**
- **System installation**
- **Application training**
- **Service training**
- **User communication**
- **Preventive maintenance**
- **Hotline**
- **Repair**

The services offered by STORZ MEDICAL range from pre-installation consulting right up to prompt support during everyday operation.

Extensive user training and application support are of course included in the scope of delivery. STORZ MEDICAL also organizes technical training sessions so that minor problems can be rectified immediately by a hospital in-house technician. The MODULITH® SLC is characterized by its excellent reliability. But should any faults be encountered, our worldwide service network ensures that qualified help is always near at hand.



STORZ MEDICAL
Kreuzlingen, Switzerland



STORZ MEDICAL

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