

# SPARK OF LIFE®

Orchestrating Music of Healing with Shock Wave

Newsletter 2020/2

## From Zeppelin Airship to Shockwave Technology



This is not only the birthplace of zeppelins and seaplanes - Lake Constance is also the home of the first non-invasive kidney stone lithotripter. When the inventor of the Zeppelins, Graf Zeppelin, saw limited chances for the future of his airships, he motivated one of his engineers, Claude Dornier, to design seaplanes. The company Dornier Airplanes was founded at

the Lake Constance with ambitious researchers who, with their knowledge of the physics of shock waves, invented the first extracorporeal shock wave lithotripter (ESWL). This opened the door to a new medical age: With the HM3, ESWL has already been established in 1983. Since then, kidney stones could be treated non-invasively and a major milestone in medicine had been reached. Although the Dornier company moved its medical technology department to Munich, companies like Storz Medical and MTS Medical, which were founded later, retained the region's expertise in the development and production of shock wave systems. MTS has been continuously improving the original technology of the HM3, the electrohydraulic or spark-systems, since 25 years and offers this technology to

customers from all over the world. Spark Wave is a well-known brand today and hence, Lake Constance is not only home to the most beautiful holiday regions in Germany - it is also a historic high-tech region.

MTS Medical cordially invites you to visit our manufacture. We would like to give you an insight into our manufactory and its history. You will witness our state of the art system and get to know our people and mission: Spark of Life. We are looking forward to welcome you as guests in this picturesque region!

Yours truly,



Nikolaus Hopfenitz  
CEO MTS Medical

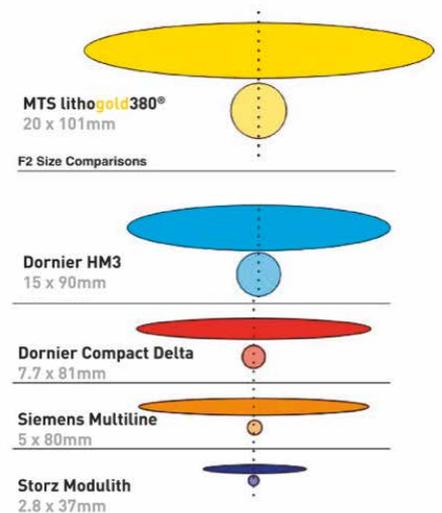
## Under the Pressure – A Soft Approach to A Hard Problem

40 years ago, Dornier company discovered – the extracorporeally shock wave lithotripsy (ESWL). With this technology kidney stone are crushed directly in the kidney and are excreted naturally.

Since the introduction of the first ESWL system, the mechanism of stone disintegration has been a main focus of discussion. On one hand, the combination of tension and pressure waves and cavitation were assumed

to be the mechanism of action, however it was also observed that the therapeutic focus sizes became smaller and smaller in the course of further technological development.

Nevertheless, the myth and success of the first kidney stone lithotripter, Dornier HM3, remained unbroken due to its good disintegration rate. This system was based on electrohydraulic technology and it had a very large therapeutic focus area.



### Tiny Dot, Immense Pain

The MTS orthogold100 with the trigger point applicator OE035 has a large focus volume. It is particularly suitable for treatment of deeper muscle groups.

### From the Laboratory

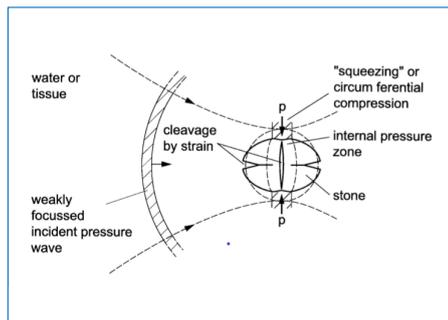
Spark Wave impulses cause a better myelination of the nerve cells with so-called Schwann cells. These envelop the axons, the long ends of the nerve cells, and thus promote their regeneration.

### SoftWave®: New Name – New Mission

Our exclusive distributor in the USA, TRT, has a new name: With a new logo and name „SoftWave Tissue Regeneration Technologies LLC“, the organization was also restructured.

Prof. Dr. Wolfgang Eisenmenger, a pioneer in shock wave physics re-examined the action mechanism of disintegration of kidney stones in 2001 and he found that small focus via cavitation and focused energy did indeed break up kidney stones, but a large focus was more effective in breaking the stone into small particles. If the focus is wide enough to surround the stone, a „squeezing effect“, as Eisenmenger named it, could be observed.<sup>1</sup>

Contrary to previous assumptions, negative energy portion, i.e. tensile energy, which is responsible for side



effects with haematomas of the kidney, is not required at all. Rather, the positive portion of the pressure wave allows the disintegration of the stones via the squeezing effect. This new scientific finding resulted in the development of MTS lithogold380 and enables a gentle and efficient therapy.

With this new concept, physics finally could explain the myth behind the Dornier HM3, and the performance of the first lithotripter which delivered a sufficiently large therapeutical focus.

Today, the focus diameter (-6dB focus) of the MTS lithogold380 has unique 2 cm width with a pressure of only 10-30 MPa, which is sufficient to pulverize the stone. The result is an important step for patients: The „kidney-friendly“ ESWL!

<sup>1</sup>Wolfgang Eisenmenger, The Mechanisms of Stone Fragmentation in ESWL, Ultrasound Med Biol, Vol. 27, No. 5, pp. 683–693, 2001



## Tiny Dot, Immense Pain



Trigger points are small muscle cramps that cause pain in distant parts of the body. They occur when a muscle is tensed for too long. The tensions

are caused, for example, by posture, unfavorable diet, insufficient level of training, injuries or spinal cord related pain. If trigger points are not treated, they cause the patient to put incorrect strain on joints.

Generally, the strain can be eliminated or alleviated by relaxing the permanently contracted muscle fibers. This allows blood circulation, which restores the energy supply of the muscle. Shock wave therapy is very effective for the relief of pain. If the shock wave is directed exactly at the area, the trigger point relaxes.

Prof. h.c. Dr. med. Wolfgang Bauermeister from Munich is a pioneer in

this field for 20 years. Shock waves are a popular application method because they are non-invasive and non-medical, have no side effects and the pain is effectively relieved or resolved in a relatively short time of treatment. Patients who especially have been treated unsuccessfully over a long period of time often benefit from this method.

The MTS orthogold100 with the trigger point applicator OE035 is particularly suitable for treatment because the trigger points are easily pin-pointed with the large focus volume of the special applicator OE035 and even deeper muscle groups can be reached.

## MTS Science Compendium

Up until today, our compendium consists of 96 scientific publications from 76 universities and institutes from 17 countries. All the researches were conducted with MTS Spark Wave Devices. Enjoy the latest news and scientific findings at our Science webpage: [www.mts-science.com](http://www.mts-science.com).



## FDA Clearance for 2nd Degree Burn

Orthogold100 recently has been cleared by FDA for this indication. Unfocussed Soft-Wave regulates the inflammatory response and accelerates epithelization. As a result, reduced scarring is a major advantage for patients not only for cosmetic purpose, but also for improved mobility.

# An International Voice for Smart Communication



Thien-Chow has been the new face in MTS Marketing since May 2020. As a native Malaysian, he is familiar with Asian customs. He studied at the

HTWG (Konstanz University of Applied Sciences) and he is still actively engaging with the university as visiting lecturer.

TC comes as a career changer from the tourism industry. Here he was particularly involved in brand marketing and destination development. What is the best way to promote a destination? What makes a place special? These are the questions TC has dealt with so far. At MTS, Thien-Chow is now responsible for the Asian market and for general brand communication.

In his free time, he is all eyes and ears. As a photographer he is out in nature, always looking for the best moments to capture. He trains his voice in various choir projects – accompanied by an orchestra. His heart beats passionately for languages. TC can speak English, German and even

Chinese in addition to his mother tongue and therefore has the best prerequisites.

But why did Thien-Chow apply with MTS? TC is enthusiastic about our international team and would like to work with the company in a committed and passionate way to improve the world of medicine through technology. He feels obliged to an old scout motto: „Try to leave the world a little better behind than you found it.“ (Lord Baden Powell) He is particularly excited about the acquisition of new customers from the Asian market. Here a lot of sensitivity and understanding for politics and society is needed – a challenge that TC will master with flying colours. MTS wishes Thien-Chow Lum a good start and is looking forward to a dynamic and stronger international team performance. 🚀

## From the Laboratory

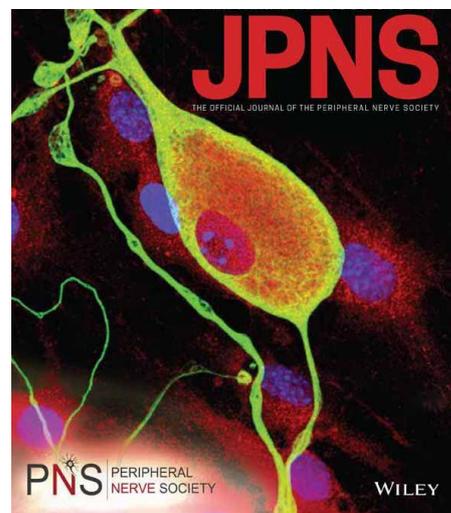
Shock waves have an influence on the growth of nerve cells. This is the encouraging result of a new study by Dr. Christina Schuh, M.A.P., from the Center for Regenerative Medicine at the Medical Faculty of the German Clinic at the University of Desarrollo in Santiago de Chile.

According to the findings of Christina Schuh, the shock wave impulses cause a better myelination of the nerve cells with so-called Schwann cells. These envelop the axons, the long ends of the nerve cells, and thus promote their regeneration. Christina Schuh writes about the Spark Wave

devices from MTS Medical: „It is a fascinating technology in a great device and we will continue the research until all the underlying mechanisms have been investigated“.

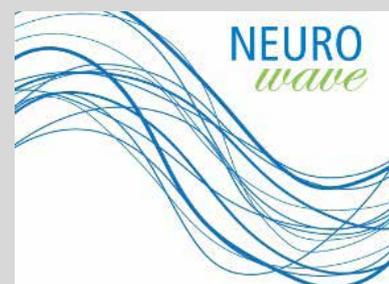
Christina Schuh's main focus is on the growth of nerve tissue and improving the regenerative capacity of Schwann cells. In addition, she is investigating the effect of extracorporeal shock wave treatment on Schwann cells as well as on mesenchymal stem cells.

These findings may be of importance in the future treatment of traumas, for example in the spinal cord. 🚀



## The “NeuroWave” Study started!

In July 2020 Wolfgang Schaden, MD, adj. Prof. Deputy Medical Director of AUVA initiated the first nationwide clinical trial investigating the effect of extracorporeal shock wave therapy (ESWT) in acute spinal cord injury (SCI) in Austria. 14 trauma hospitals participate in the clinical trial and will use the MTS Spark Wave powered orthogold100 for the study.



# SoftWave®: New Name – New Mission

Our exclusive distributor in the USA, TRT, has changed its name: With a new logo and the new name „SoftWave Tissue Regeneration Technologies LLC (SoftWaveTRT)“, the organization was also restructured. SoftWave looks back on a variety of successes in the last years. In addition to the lithogold380, orthogold100 and dermagold100 have also received FDA Clearance for sale in the USA. SoftWaveTRT LLC. has excellent networks and has many of the most renowned clinics in the USA among its

customers. Now SoftwaveTRT LLC. will use additional capital to create new structures of the organization for the future. Together with MTS, further milestones in the market will be pursued. SoftwaveTRT LLC. is engaged in basic research and new areas of application - for example, for the therapy of top athletes or for the regeneration of nerve cells in spinal cord injuries. MTS will continue to optimize the physical parameters of shock wave therapy and increase the service lifetime of the applicators, as the areas



of application will continue to grow. SparkWaves are the avant-garde of the technology and are preferred by experts worldwide. SoftWaveTRT LLC. intends to use MTS products to expand its customer base in the USA and establish itself as a technology leader. Be excited about the future: SoftWaveTRT LLC. has big plans! 🚀



**Leading  
Shock Wave Innovations**

## SOFTWAVE TISSUE REGENERATION TECHNOLOGIES LLC

SoftWaveTRT LLC is the exclusive distributor of MTS in USA. Distinguished by its patented unfocused shock wave SoftWave® which generates less pain, has a high efficacy rate and has a lower re-treatment rate than radial or focused shock wave devices.

Together with MTS, SoftWaveTRT LLC continues to unfold the potentials of electrohydraulic shock wave technology, bringing the treatment quality of SoftWave® Devices to the next level.

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wound healing and urology –  
as well as in areas which have  
previously been difficult to  
treat. Thanks to its participation  
in various clinical studies, MTS  
Medical is one of the pioneers  
in the field of non-invasive tis-  
sue healing and regeneration.