Piezosurgery® 3
the third generation of the original
PIEZOSURGERY® 3 –
the evolution of a revolution

the history of the market leader

1997
- mectron and Prof. Tomaso Vercellotti developed the idea of piezoelectric bone surgery
- the main technological advancement is the adaption of ultrasound movement for bone cutting
- mectron produces the first prototype devices for piezoelectric bone surgery
- first extraction treatments

1998
- first lateral sinus lift treatments

1999
- Prof. Tomaso Vercellotti introduced the name PIEZOSURGERY® for the new method
- first bone splitting treatments in the maxilla

2000
- first bone splitting treatments in the mandible
- first case studies about ridge expansion are published*
- mectron starts serial production of the PIEZOSURGERY® device

2001
- first crestal sinus lift treatments
- PIEZOSURGERY® I, the worldwide exclusive first unit of piezoelectric bone surgery, is presented by mectron at IDS
- over 20 inserts are already available
- first study about sinus lift with PIEZOSURGERY® presented

2002
- development of periodontal resection surgeries
- first bone block grafting treatments

2004
- more powerful and better ergonomics – mectron presents the 2nd generation of the PIEZOSURGERY® device
- first orthodontic microsurgery treatments
The innovative qualities of the original mectron PIEZOSURGERY®
- Micrometric cutting action for maximum surgical precision and intra-operative sensitivity
- Selective cutting action for minimal damage to soft tissue, maximum safety for you and your patients
- Cavitation effect maximum intra-operative visibility and a blood-free surgical site
are further improved in PIEZOSURGERY® 3.

The most effective device in the market becomes even more powerful, and at the same time it becomes even simpler to use.

2005
- more than 30 scientific studies about PIEZOSURGERY® are published
- the first competitive units are launched
- first implant site preparation treatments using PIEZOSURGERY®

2007
- mectron presents the innovative inserts for implant site preparation, at the same time the first study about the inserts is published

2009
- PIEZOSURGERY® 3 – the third generation is presented

* You will find a selection of clinical and scientific studies about mectron PIEZOSURGERY® in the brochure „Scientific Abstracts – 10 years of clinical research | Vol.1“. A downloadable version is available at the mectron website www.mectron.com.
PIEZOSURGERY® 3 – the intelligent way of showing strength!

PIEZOSURGERY® 3’s electronics provides maximal power. Thanks to its intelligent software the original PIEZOSURGERY® achieves its unique cutting efficacy. Additionally, all of the electronics work automatically without time consuming settings.

POWER
- controlled by unique digital electronics
- unique frequency range of 24-36 kHz for operating with highly complex inserts efficiently and safely

FEEDBACK-SYSTEM
- constant and optimal tuning of insert movement
- 29% increased sensitivity compared to PIEZOSURGERY® II
- automatically detects if more or less power is necessary and adjusts it accordingly
- user intervention is simplified to the push of the foot pedal

APC ON BOARD
- APC = Automatic Protection Control
- APC ensures maximum safety
- automatically recognizes deviations from normal functioning and stops both the ultrasound and irrigation within less than 0.1 seconds.
- the cause of the interruption is indicated on the display
PROGRAMS
Choose a basic mode (BONE, IMPLANT, ROOT), select the type of surgery, adjust irrigation with the "-" or "+" buttons and the surgery can start. The necessary fine tuning for each insert and indication is achieved automatically by the electronic feedback-system.

CONTROLS
- only 4 buttons
- simple and ergonomical

IRRIGATION
- adjusted by "-" und "+" buttons
- internal safety control ensures constant irrigation flow during surgery

CLEAN FUNCTION
- controlled by the foot pedal
- cleaning cycle for the device’s main tubes
FLEXIBILITY
- flexible choice of several irrigation options
- 360° function of the foot control
- digital transformer allows voltage from 100 - 240 V

HYGIENE
- handpiece and handpiece cord (including the liquid line) are fully sterilizable together
- easy-to-clean keyboard
- tube of peristaltic pump tubing and connections of the liquid line are sterilizable
- sterilizable torque wrench

ECONOMY
- the irrigation system works with cost-effective standard parts
- tube of peristaltic pump is reusable
- standard connections for tubing
- liquid line integrated in handpiece cord

SAFETY
- reliable peristaltic pump for irrigation
- handpiece cord coupling protected against mishandling
- unique all-in-one handpiece and handpiece cord system
- once positioned the foot pedal is stable due to its weight
- transformer stable against variation in voltage (avoid insert breakage)

ERGONOMICS
- controlled by only 4 buttons
- unique all-in-one handpiece and handpiece cord system
- handpiece cord is extremely flexible
- slim design of the handpiece
- easy-to-read, illuminated display
- high-grade handpiece connectors
- torque wrench ensures optimal energy transmission
- simple peristaltic pump
- U-bolt for easy positioning of foot pedal
PIEZOSURGERY® 3 — the perfect tool for daily use!

The ergonomics of PIEZOSURGERY® 3 are ideal for daily use. With its simple handling it offers utmost treatment security. Materials and surfaces are selected for easy cleaning, disinfection and sterilization. As part of its commitment to customer satisfaction, whenever possible, mectron avoid the use of expensive single use parts, such as disposable liquid lines.
Implant explantation

surgical applications

Oral Surgery

- Extraction for immediate loading
- Ankylosic tooth extraction
- Dysmastic surgery
- Eighth tooth extraction
- Included tooth extraction
- Distraction osteogenesis
- Cystectomy
- Implant explantation

Implantology

- Laterale Sinus Lift
- Implant site preparation
- Ridge expansion
- Lateralization of nerves
- Crestal Sinus Lift
- Bone chips harvesting
- Bone block harvesting

Oral Surgery

Implantology

PIEZOSURGERY®
PIEZOSURGERY® 3 – extremely versatile ... from implantology to orthodontic surgery
I gentle and effective bone cutting action
I fine and well-defined cutting line
I used for implant site preparation, osteoplasty techniques and bone chip harvesting

SHARP INSERTS

I diamond surfaces for precise and controlled operation on bone structures
I preparation of difficult and delicate structures (ex: sinus augmentation, nerve lateralization)
I preparation of the final bone shape

SMOOTHING INSERTS

I of soft tissue preparation (ex: Schneiderian's membrane, nerve lateralization)
I root planing in periodontology

BLUNT INSERTS

IM3A – highly complex insert for the implant site preparation. New and exclusive patented technology by mectron.
PIEZOSURGERY® inserts – from clinicians for clinicians!

Over 50 inserts – mectron offers the widest range of inserts for piezoelectric bone surgery – thanks to more than 12 years of experience in insert development. This experience makes mectron the inventor and innovator in the field of piezoelectric bone surgery, e.g. the new inserts for the implant site preparation.

INSERT DEVELOPMENT

1. close collaboration with universities for the development of inserts
2. computer simulation of shape and insert movement. The finite elements method allows precise prognoses of insert movements
3. extensive clinical testing – feedback from experienced practitioners

INSERT KITS
- set of inserts for specific application
- stainless steel tray with depth markings
- for sterilization and storage
Piezosurgery® inserts – because quality matters!

Ultrasound inserts oscillate up to 36,000 times per second. An enormous stress for the material. Therefore mectron uses only medical grade, high quality, stainless steel for insert production. Each mectron ultrasound insert will pass through 12 working steps.

**Precision**
A CNC controlled 5-dimensional sharpening machine cuts with an accuracy of up to 0.1 µm. The whole cutting process for a single insert last up to 12 min.

**Diamond Coating**
Depending on the indication, the inserts are coated with specially selected diamonds. The granulometry of the diamond coating is adapted to the respective treatment.

**Titanium Nitrid Coating**
A coating of titanium nitride, applied to inserts, increases the hardness of the surface, avoids corrosion and therefore increases working life.

**Labeling**
Each insert is labeled gently by a laser.

**Quality Check**
Each insert is checked in detail before getting an OK for sales.
The basis of the original method’s efficiency is the controlled insert vibration. Therefore inserts and device have to be matched perfectly – a complex procedure as you have to control a multitude of different parameters.

Alike is not identical – counterfeited inserts and accessories are offered for the original PIEZOSURGERY® method today. Using counterfeited accessories can have serious consequences: from damages of the device up to injuries of the patient.

Piezoelectric bone surgery – the inserts reflect the know-how

**INSERT SURFACE**

Surface quality has a distinct impact on stability and lifespan of the insert. Insert quality also affects clinical results. As most studies are done with mectron PIEZOSURGERY®, nobody can evaluate the effects of bad quality inserts on bone.

**HANDPIECE THREAD**

Poorly manufactured counterfeited inserts may damage the handpiece. Warranty is voided in such cases.

**INSERT SHAPES**

The promise is identical, bone cutting for ridge expansion or bone block grafting. What ever the treatment is, insert quality is fundamental for clinical success. Cutting characteristics such as osteotomy depth and velocity depend not only on electronics but also – and to great extent - on insert design. A simple comparison reveals the truth: only the best inserts deliver the promised result!
HISTOLOGICAL RESULTS
Comparative studies have demonstrated both the clinical and histological advantages of the PIEZOSURGERY® device.

METHOD PIEZOSURGERY®: EVIDENCED-BASED
With over 12 years of successful clinical research, the original PIEZOSURGERY® method is the only one supported by more than 50 clinical and scientific studies. An updated list of publications can be found at www.mectron.com. An abstract collection is also available for download.

PIEZOSURGERY® – 12 years of successful scientific research
www.piezosurgery.com –
the scientific info platform

The website of the PIEZOSURGERY® academy, an independent institute for the advancement of the original PIEZOSURGERY® method. To find out about the possibilities of PIEZOSURGERY®, join one of the many seminars which are held in different languages.

TECHNICAL SPECIFICATIONS

Dimensions (LxWxH) 340 x 210 x 150 mm
Weight 3.2 kg
Working frequency 24.000 – 36.000 Hz
max. 25 W
Working power of handpiece adjustable to 6 output levels:
- BONE Mode
- CORTICAL
- SPONGIOUS
- SPECIAL
- IMPLANT Mode
- IMPLANT
- ROOT Mode
- ENDO
- PERIO
Output levels
Delivery rate of the peristaltic pump
- BONE outputs 8-90 ml per min.
- IMPLANT outputs 8-90 ml per min.
- ROOT outputs 0-90 ml per min.

Power supply connection to the power supply is sufficient
Power supply voltage fully digital 100-240 Vac 50/60 Hz
Max. power absorbed 120 W
Warranty device 2 years; handpiece and handpiece cord 1 year
Why would you buy an imitate when you can have the original?

www.mectron.com or mectron@mectron.com

MECTRON PIEZOSURGERY®

MECTRON® PIEZOSURGERY®

You can have the original?

Why would you buy an imitate when