EXPERIENCE PIEZOSURGERY®
EXPERIENCE PRECISION.
Why the PIEZOSURGERY® technology is a cut above the average.

When it comes to cutting bone, you can of course use traditional burs and saws. They do cut bone, too – but they do not differentiate: any soft tissue getting in their way will also be cut.

The special ultrasonic microvibrations of the original PIEZOSURGERY® technique cut bone – and nothing else. No soft tissue is damaged, which allows you to work with a precision that facilitates not only surgery itself, but reduces postoperative discomfort for your patients at the same time.

So, if you are looking for a technology with maximum precision and control – and minimal stress for you and your patients – here you go.

- MICROMETRIC CUTS
  PIEZOSURGERY® provides micrometric cuts for minimally invasive surgeries with maximum surgical precision and intra-operative tactile sensation.

- SELECTIVE CUTS
  PIEZOSURGERY® protects any kind of soft tissue. Nerves, vessels and membranes will not be injured while cutting bone. Thus PIEZOSURGERY® offers maximum safety for surgeons and patients.

- CAVITATION EFFECT
  PIEZOSURGERY® offers maximum intra-operative visibility. The cavitation effect of the ultrasonic movements lead to a blood-free surgical site.

- THE PATIENT’S BENEFIT
  → soft tissue will be protected, f.e. in lateral sinus lift surgery the risk of perforation is reduced over 80%
  → less swelling after surgery with PIEZOSURGERY®
  → faster and better osseointegration after implant site preparation with PIEZOSURGERY®
  → faster and less traumatic post-operative recovery.
EXPERIENCE SAFETY.
How clinical applications benefit from PIEZOSURGERY® technology.

→ SINUS LIFT TECHNIQUE
- safer opening of the lateral window
- less membrane perforations
- safe detachment of the membrane
- less post-operative complications

→ IMPLANT SITE PREPARATION
- safe preparation in regard to the inferior alveolar nerve
- less post-operative inflammation
- faster healing and therefore higher primary stability
- possibility of immediate post-extractive implant site prep
- possibility of differential implant site prep (correction of the axis)

REFERENCES
Whether it is about sinus lift or implant site preparation, about extraction or bone block grafting – one of the most important features you demand from your operating device is safety.

Now that is exactly what PIEZOSURGERY® is about. Its major strength is minimizing the risk of cutting soft tissue like vascular and nerve masses – as these are not sensitive to the frequencies used by the PIEZOSURGERY® technology.

→ EXTRACTION/EXPLANTATION

→ bone preservation in impacted or ankylosed root and third molar extractions
→ safe preparation in regard to the mandibular nerve for wisdom tooth extraction
→ reduced amount of facial swelling and trismus 24 hours after surgery
→ immediate implant site preparation due to the maximum precision in alveolar bone osteotomy-osteoplasty.

→ BONE BLOCK GRAFTING

→ maximum surgical control in bone grafting from mandibular ramus and chin
→ absence of necrosis traces on the surface of the cut
→ presence of nucleated osteocytes, indicative of the atraumatic effect

→ REFERENCES


→ REFERENCES

EXPERIENCE ERGONOMICS.

How mectron re-defines bone surgery with the new PIEZOSURGERY® touch.

When mectron introduced PIEZOSURGERY® in 2001, the technology was revolutionary for bone surgery: a device which provided precision, safety, perfect ergonomics and the highest quality to surgeons all around the world. Soon the new technology became the benchmark for bone surgery devices.

In 2011, mectron presents a benchmark again: the new PIEZOSURGERY® touch. Its exclusive black touch screen, its easy to handle user interface and features like the new handpiece with rotatable LED lift ergonomics in surgery to a completely new level.

So get ready for selecting bone quality and irrigation flow rate at the touch of your finger – get ready for the new PIEZOSURGERY® touch.
Providing the optimal ratio between power and security is one of the key success factors of every surgery. Thanks to its intelligent electronic feedback system the original mectron PIEZOSURGERY® technology provides the maximum of power and achieves perfect cutting efficacy in every situation – for surgeries which are time-efficient, secure and successful.

→ HANDPIECE WITH LED
→ swivel-type LED-light can be directed to the insert tip
→ choice between automatic, and permanent light or switched off

→ WORKING EFFICIENCY
→ constant and optimal tuning of insert movement
→ automatically detects if more or less power is necessary and adjusts it accordingly
→ user intervention is simplified to the push of the foot pedal

→ FLEXIBLE HANDPIECE POSITION
→ easy to adopt handpiece holder
→ 4 positions
→ sterilizable

→ UNIQUE HANDPIECE SYSTEM
→ sterilizable, all-in-one LED-handpiece and handpiece cord system
→ sterilizable, internal irrigation line, no disposables needed
→ new handpiece cord coupling protected against mishandling

→ FEEDBACK-SYSTEM
→ constant and optimal tuning of insert movement
→ automatically detects if more or less power is necessary and adjusts it accordingly
→ user intervention is simplified to the push of the foot pedal
EXPERIENCE EFFICIENCY.
How the new PIEZOSURGERY® touch lets you focus 100% on surgery.

STEP 1: touch the kind of surgery. STEP 2: touch the amount of irrigation.
STEP 3: Start surgery. Believe us: it is as easy as that. No further insert specific adjustments are required – the fine tuning for each insert and indication is done automatically by the PIEZOSURGERY® touch electronic feedback-system.

This feedback system is the heart of the new PIEZOSURGERY® touch technology. It automatically adjusts things like the optimal insert movement or the appropriate power used – and lets you concentrate on your actual job: surgery itself.

FLEXIBLE IRRIGATION SYSTEM
- 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

STERILE PROTECTION FOILS
The exclusive glass display of the PIEZOSURGERY® touch can be protected with a dedicated sterile transparent foil. Thanks to these invisible shields, no dirt, scratches or fingerprints will affect your glass keyboard.
EXPERIENCE SIMPLICITY.

How mectron focuses on simplicity with the PIEZOSURGERY® 3.

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

ECONOMY
- the irrigation system works with cost-effective standard parts
- peristaltic pump tubing is reusable
- standard connections for tubing

SAFETY
- reliable peristaltic pump for irrigation
- handpiece cord coupling protected against mishandling
- once positioned the foot pedal is stable due to its weight

ERGONOMICS
- handpiece cord is extremely flexible
- slim design of the handpiece
- simple peristaltic pump
Now this is as easy as it gets. If you are looking for a device which provides simplicity and clarity in every detail – here you are:

100% simple handling for utmost treatment security. Materials especially selected for easy cleaning, disinfection and sterilization. Cost-effective standard parts for perfect economy.

You call that perfect for daily use. We call it PIEZOSURGERY® 3.

→ FLEXIBILITY

→ flexible choice of several irrigation options
→ 360° function of the foot control
→ digital transformer allows voltage from 100 – 240 V

→ CONTROLS

→ only 4 buttons
→ simple and ergonomic

→ 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 irrigation tubes
EXPERIENCE INNOVATION.
How mectron develops new inserts again and again – with clinicians, for clinicians.

Who could have better ideas and suggestions for new surgical inserts than surgeons themselves? That is why most of our ideas are coming directly from experienced clinicians.

The combination of their ideas with our longstanding experience and technical know-how in insert development is the basis for inserts that are absolutely outstanding and allow highly precise surgical interventions.

A perfect example of our expertise is the world’s thinnest osteotomy insert with only 0.35 mm thickness. The best proof of our expertise is that we have more than 70 high quality inserts – the widest range of inserts for piezoelectric bone surgery worldwide.

SHARP INSERTS
- Gentle and effective bone cutting action
- Fine and well-defined cutting line
- Used for implant site preparation, osteoplasty techniques and bone chip harvesting

SMOOTHING INSERTS
- Diamond-coated surfaces for precise and controlled operation on bone structures
- Preparation of difficult and delicate structures (ex: sinus augmentation, nerve lateralization)
- Preparation of the final bone shape

BLUNT INSERTS
- Soft tissue preparation (ex: Schneiderian membrane)
- Root planing in periodontology

INSERT KITS
- Set of inserts for specific application
- Stainless steel tray with depth markings
- For sterilization and storage
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 lasts 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 NITRIDE 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.

EXPERIENCE QUALITY.
How mectron guarantees highest quality standards for every single insert.

During every surgical procedure, an ultrasonic insert oscillates up to 36,000 times per second – an enormous endurance test for the material. That’s why only medical grade stainless steel is employed in the production of mectron inserts. And that is why every single ultrasonic insert has to pass 12 working steps before it is ready to bear our name.

Furthermore, these 12 working steps ensure the perfect match of device and insert – which is crucial for the controlled insert vibration, the basis of the PIEZOSURGERY® efficiency.
EXPERIENCE DIVERSITY.

How PIEZOSURGERY® covers everything from implantology to orthodontic surgery.

Around 70 different inserts have been already developed for mectron PIEZOSURGERY®, creating the most complete range of tips on the market for a large variety of clinical indications.
EXPERIENCE INTEGRATION.
How PIEZOSURGERY® will support osseointegration of implants!

Implant site preparation with PIEZOSURGERY®, the revolutionary technique – safe and precise.

→ faster osseointegration: thanks to the reduction of inflammatory cells and the more active neo-osteogenesis compared to drilled sites
→ high intraoperative control: the particular shape of the implant inserts allows a perfect control of the site preparation
→ preparation of 2, 3 and 4 mm: site preparation with PIEZOSURGERY® allows placement of all common implants

1 initial pilot osteotomy
OPTIONAL: check the preparation axis with alignment PIN IMIS
2 pilot osteotomy in anterior or posterior region
OPTIONAL: check the preparation axis with alignment PIN 2-2.4
3 to optimize concentricity of implant site preparation between Ø 2 and Ø 3 mm, preparation of the cortical basal bone
4 to enlarge or to finalize the implant site preparation; insert with double irrigation for optimum cooling
To optimize concentricity of implant site preparation between Ø 3 and Ø 4 mm, preparation of the cortical basal bone to finalize the implant site preparation; insert with double irrigation to avoid overheating.

**OPTIONAL:** to correct pilot osteotomy axis (differential implant site preparation), to finalize the implant site preparation close to the alveolar nerve.

The inserts for the implant site preparation are dedicated to bone quality of the maxilla.
EXPERIENCE CONTROL.

How the SINUS PHYSIOLIFT® gives you perfect control during sinus lift operations.

The new SINUS PHYSIOLIFT® controls the pressure in the sinus cavity!

- Elevation of the sinus membrane with micrometric precision by means of hydrodynamic pressure
- Watertight sinus elevator for hydrodynamic sinus lift
- Atraumatic technique not requiring the use of hammer and osteotome
- Implant site preparation using PIEZOSURGERY® – the sinus basal cortex is removed with minimal risk of perforating the Schneiderian membrane
- Multiple implant placement can be performed
- A flapless procedure can be performed in some cases

HANDLING

After preparation of the site with PIEZOSURGERY®, the CS1 elevator is introduced and the tube connected to a syringe containing 3 ml of physiological saline solution is then inserted in the CS1. With the SINUS PHYSIOLIFT® protocol, it is possible to elevate the Schneiderian membrane safely, controlling the pressure of the liquid by means of the attached Physiolifter.
This technique, devised for single tooth gaps, can be used even if several teeth are missing. The surgical procedure is identical for the second implant site: a second screw elevator is inserted. It must be ensured during this procedure that the first screw elevator is impenetrable by applying a special airtight seal so that the system is not pneumatized during the second lift.*

1. 2-mm thick ridge
2. Initial osteoplasty (insert OP3) to increase the thickness of the ridge from 2 to 3 mm
3. Crestal osteotomy with 0.35 mm thick PIEZOSURGERY® insert OT7S-4
4. Introduction of 2.5 mm and 3.5 mm bone expanders in sequence
5. X-ray of bone expanders
6. End result

The coronal part of the expander is smooth, only the initial part being threaded. When the smooth part comes into contact with the corticalis, instead of penetrating into it, it displaces it, facilitating lateral expansion.

Uses an implantology micromotor for ridge expansion. Maximum control of the direction of insertion and of the torque (screwing power).

Use of the ratchet in the last stage of insertion of the expanders. It is possible to make a half or quarter turn at a time.
EXPERIENCE STABILITY.
How mectron bone expanders guarantee you perfect stability in implantology.

- Technique for expanding the atrophic alveolar ridge
- Lateral bone condensation technique – lateral compacting of the trabeculae in poor quality bone, greatly improving primary stability
- Technique is less traumatic for the patient than working with a hammer and chisel

**LATERAL BONE CONDENSATION**

1. Thickness of the ridge: 3 mm – cancellous bone quality D4
2. Initial preparation of the site with IM1 insert
3. Preparation of the site with PIEZOSURGERY® insert IM2P
4. Bone expanders inserted, lateral bone compacting of the medullary bone, with transition from D4 to D3
5. X-ray view showing expanders in place
6. Implants in place
mectron and Prof. Tomaso Vercellotti developed the idea of piezoelectric bone surgery. The main technological advancement is the adaptation of ultrasonic movement for bone cutting. mectron produces the first prototype devices for piezoelectric bone surgery. First extractions treatments, first lateral sinus lift treatments, and first crestal sinus lift treatments. Prof. Tomaso Vercellotti introduced the name PIEZOSURGERY® for the new method. The first case studies about ridge expansion are published. Micromotor starts serial production of the PIEZOSURGERY® device.

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- the main technological advancement is the adaptation of ultrasonic movement for bone cutting
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- 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
- Micromotor starts serial production of the PIEZOSURGERY® device

2001
- first crestal sinus lift treatments
- Piezosurgery® I, the world-wide exclusive first unit of piezoelectric bone surgery, is presented
- over 20 inserts are already available
- first study about sinus lift with PIEZOSURGERY® presented
- development of periodontal resection surgeries
- first bone block grafting treatments

2002
- Microvibration and reduced noise minimize a patient’s psychological stress and fear during osteotomy under local anesthesia.
- When using the PIEZOSURGERY® technique, on the other hand, the effort required to make a cut is very slight. This means that greater precision is achieved, guaranteed by the microvibrations of the insert.
- The revolutionary properties of piezoelectric surgery have simplified many common osseous surgical procedures, including sinus bone grafting.
- The membrane perforation rate in this series of 100 consecutive cases using the piezoelectric technique has been reduced from the average reported rate of 30% with rotary instrumentation to 7%.
- The morphometrical analysis revealed a statistically significant more voluminous size of the particles collected with PIEZOSURGERY® than rotating drills.
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EXPERIENCE

How mectron has been defining the future of bone surgery for the last 12 years.

Have you ever looked for scientific studies on bone surgery using other devices than PIEZOSURGERY®? Well, you could as well look for a needle in a haystack – their number is extremely slight.

From the very beginning 12 years ago we have worked together closely with scientific institutes and done successful clinical research. That is why the PIEZOSURGERY® method is the only one supported by more than 100 clinical and scientific studies.

But find out for yourself – on www.mectron.com. Here you will find the abstract collections as well as an updated list of publications about PIEZOSURGERY®.

* You will find a selection of clinical and scientific studies about mectron PIEZOSURGERY® in the two volumes of the brochure „Scientific Abstracts – 10 years of clinical research“. A downloadable version is available at the mectron website www.mectron.com.
EXPERIENCE EDUCATION.

How mectron prepares you for the PIEZOSURGERY® method.

Besides its revolutionary technology, its unique level of quality and its perfect ergonomics there is another important factor for the success of the PIEZOSURGERY® technology: you.

That’s why we offer you the perfect preparation: intensive training and continuing education that has been crucial for PIEZOSURGERY® since the beginning – and which have made it what it is today: state-of-the-art in various surgical procedures.

More than 40 videos of surgeries are on the DVD. Allowing an easy orientation about the possibilities PIEZOSURGERY® is offering.
On www.mectron.com we offer you even more seminars: In the section courses and workshops you will find different seminars on PIEZOSURGERY® in English. Please contact your mectron partner for courses in your local language – you will find the contact address in the dealer list on our website.

WWW.PIEZOSURGERYACADEMY.COM
Welcome to the PIEZOSURGERY® Academy – an independent institute for the advancement of the original PIEZOSURGERY® method. Feel free to discover the various possibilities of PIEZOSURGERY® and join one of our diverse seminars - of course offered in different languages.

WWW.MECTRON.COM/EDUCATION
On www.mectron.com we offer you even more seminars: In the section courses and workshops you will find different seminars on PIEZOSURGERY® in English. Please contact your mectron partner for courses in your local language – you will find the contact address in the dealer list on our website.
Now, after learning about the various benefits of the PIEZOSURGERY® technology, you might ask yourself: can I get this quality, this precision, this experience and this efficiency in other dental fields, too?

The answer is: yes. mectron offers you a wide range of dental products from air-polishing to LED-polymerization lights and ultrasonic scalers. So if you are looking for a strong and reliable partner for almost every dental challenge – experience mectron.
AIRPOLISHING

ULTRASONIC SCALER

IMPLANT CLEANING

PROPHYLAXIS POWDERS

ENZYMEC

- enzymatic solution for efficient removal of organic residue
- specifically dedicated to the “clean” function of all PIEZOSURGERY® devices
- easy handling thanks to the dosage measuring
AND NOW HERE’S AN EXPERIENCE WE MADE: 12 YEARS OF CLINICAL SURGERY. MECTRON PIEZOSURGERY® touch

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