for drilling, cutting and remodeling mineralized tissues. The cutting action produced by the unique modulated ultrasonic vibration of Piezosurgery is micrometric (extreme precision) and selective (no trauma to soft tissue); additionally, combined with irrigation, the vibration produces a “cavitation effect” that helps to keep the surgical site sterile and bloodless.

Over the years, as the result of Mectron’s continuous technological innovation, more than 50 insert tips have been designed and engineered to provide surgeons with the best cutting tools for each anatomical situation. Indeed, Piezosurgery allows one to perform bone surgeries with high precision, greater respect for soft tissues, greater visibility and enhanced healing.

What are the advantages of Piezosurgery in implant and bone surgery?

The surgical advantages of Piezosurgery are many and truly remarkable:1

First, Piezosurgery delivers high precision, the ultrasonic wave employed by the device is a “microvibration,” which compared to the macrovibrations by the device is a “microvibration,” to soft tissues, allowing for maximum intraoperative visibility.

Second, Piezosurgery delivers maximum invisibility and enhanced healing.

Promoted by the limitation in precision and safety of traditional bone-cutting instruments, my father pioneered the use of piezoelectric ultrasonic frequencies for bone surgery. Upon realizing that the effectiveness of conventional ultrasonic instruments in cutting bone was extremely limited, he set off, in conjunction with Mectron Medical Technology, to develop a new technology that would allow overcoming such limitations. Their joined efforts resulted in the creation of Piezosurgery, a technology that has truly revolutionized the way we approach bone surgery.

Thanks to the specific resonance range, the device is extremely effective on mineralized tissues but totally harmless to soft tissue, allowing for a safety level never experienced before.

This feature is obviously of crucial importance when operating in proximity of delicate soft-tissue structures, such as blood vessels, nerves, mucosa, etc. Third, thanks to its dual-wave technology, Piezosurgery delivers maximum intraoperative visibility.

When the “hammering effect” produced by the wave modulation on the insert tip hits the irrigation solution, the latter is converted in a fine spray. The sprayed molecules of the irrigation fluid hit the cutting site, cool it down and produce a temporary hemostatic effect, allowing for maximum visibility during surgery. Once terminated, the surgery bleeding resumes, hence starting all biological processes leading to proper healing. Lastly, one of the greatest advantages of Piezosurgery is the fact it is gentler to the tissues and, in fact, reduces faster healing. Histological and immunohistological studies have shown that compared to traditional techniques, the use of Piezosurgery is not only characterized by minimal postoperative bone loss but actually promotes faster heal-