

radioSURG® 2200

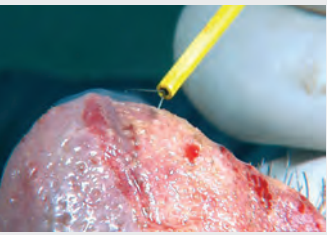
One device for all surgical treatments!



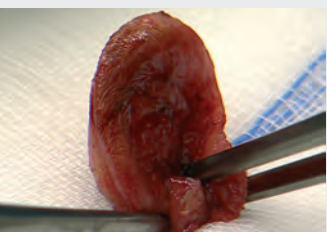
"We have not invented radio surgery
but for its application
we have set new standards."

 **MEYER-HAAKE**
MEDICAL INNOVATIONS
www.meyer-haake.com

Radio surgery for all medical fields instead of a scalpel!



*Removal
of a rhinophyma*



*Conisation at
the portio uteri
with the BIO-
CONE electrode*

The radioSURG® 2200 is applicable for ...

- Child and neonatal surgery
- Dentistry
- Dermatology
- ENT surgery
- Esthetic-plastic surgery
- General surgery
- Gynecology
- Neurology
- Ophthalmology
- Oral and maxillofacial surgery
- Orthopedics
- Pediatrics
- Phlebology
- Plastic-esthetic surgery
- Podology
- Proctology
- Urology
- Vascular surgery and so on

Advantages of correctly applied radio surgery ...

- Clear and open operation area
- No delayed wound healing
- Relaxed working without pressure
- Sterile area of operation
- No interfering bleeding
- Preservation of tissue tautness

**Radio surgery can also be used
successfully in the dental field.**

FAQs – What you always wanted to know

1. What is radio surgery?

Radio surgery is the use of high frequency energy for cutting, cutting with simultaneous coagulation and coagulation on the human (or animal) body.

2. What is radio frequency?

Radio frequency is an electric current which is produced by the **radio SURG® 2200** with a frequency of 2.2 MHz (2 200 000 cycles per second). This energy of 2.2 million cycles/sec. is concentrated at the tip of the electrode. As soon as the tissue is touched, the cell vaporizes. This is because the fluid of the cell expands, the cell explodes and vaporizes. The effect of cutting or coagulation occurs quicker with units working within the megahertz range and, therefore, does not thermally damage the surrounding area. The electrode is a conductor for the high frequency power only and does not become hot. This can be demonstrated very well with an inflated balloon, which will not explode when touched with the activated electrode, as the heat develops only within the tissue when high frequency waves are used.

3. What are the advantages of megahertz units compared to kilohertz units?

3.1 Fewer sparks – no burns

With high frequency units it is possible to use smaller inductors – electronic components which can store electricity – in the generator, which results in smaller voltage peaks. The risk of light arcs, which can develop a heat of more than 1000 °C, is dramatically reduced. Therefore, burning, necrosis and infections do not occur.

3.2 Voltage regulation – Histo-pathological examination of a specimen

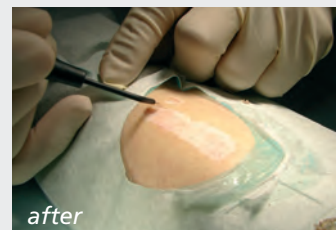
The voltage of the **radioSURG® 2200** is regulated and is, therefore, constant during application (discrepancies of only $\pm 2\%$). Due to constant voltage it is possible to accomplish an excellent, clean cut, which barely differs from an incision made with a scalpel and which can be **examined histo-pathologically**.

3.3 Minimal risk of an electric shock

Condensers (accumulator for electric energy) are incorporated into all high frequency units in order to prevent patients from the danger of continuous current flowing through their body. These condensers can discharge during surgery which leads to a sudden muscle convulsion and a short and intense pain. Within megahertz units, smaller condensers can be used, so the discharging is not noticeable and side-effects such as muscle convulsion and sudden intense pain do not occur.



Removal of a gynecomastia



Removal of hypo-pigmentation with disc electrode

FAQs – What you always wanted to know



Traumatic rupture of the septum orbitale in ferio



3.4 Minimized electric circuit resistance

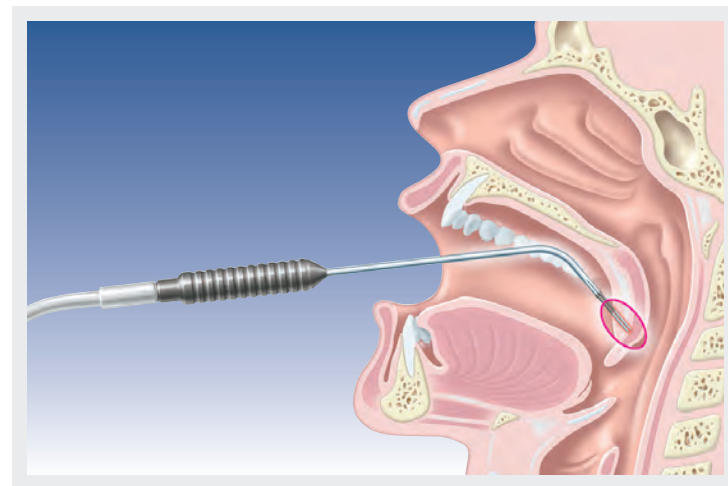
Units that have a higher frequency reach a constant and smaller electric circuit resistance between area of work and neutral electrode, therefore, units with a higher frequency ensure a safer conduction of the high frequency waves.

4. What type of surgical interventions can be made with a radio surgical unit?

In principle, a radio surgical unit can substitute a scalpel. Since operations can be performed without tension, pressure or any movement of the tissue, it is suitable for any type of surgical intervention, especially when very fine incisions are required, and if minor or major bleeding is expected. The absolute sterility of cuts along the cutting line of the electrode is a major advantage of radio surgery, as this prevents germs from being transported – which can happen when using a scalpel.

5. What is the purpose of the automatic switch-off?

The built-in automatic switch-off in **radioSURG®2200 "TPA"** gives doctors treating snorers the certainty that the tissue will be dehydrated only insofar that no burning or necrosis can occur, as the unit switches off automatically when a certain resistance is reached. The tissue is tightened with electrodes which of course are re-usable. With this method the patient suffers from slight swallowing difficulties for a few days only. The same method can be applied, for example for tonsil reduction, turbinate, etc.



FAQs – What you always wanted to know



6. What is a trigger exit?

The units are standard equipped with a trigger exit enabling a smoke evacuation system to be adapted e.g. the **smokeSTAR** from Meyer-Haake. Physicians, staff and patients can be protected from contamination through toxic and potentially infectious combustion products. A surgical mask is in this case not sufficient, as it only filters 30 % of the combustion products. Patients are also completely unprotected.

7. What is a potential equalizer?

It is a connector for additional grounding while using several electrical devices in the operation theatre to prevent current leakage (law in many hospitals).



FAQs – What you always wanted to know



8. Can scalpel incisions be compared to radio surgical incisions?

Tests have clearly shown that surgeries carried out with the cutting current (fully filtered wave) and an output frequency in the megahertz range, have a superior healing, compared to surgeries performed with a scalpel. Of course provided that the correct wave, power intensity, electrode and the suitable equipment are chosen.

9. How can hand pieces and electrodes be sterilized?

Hand pieces and re-usable electrodes can be autoclaved up to a temperature of 134 °C/275 °F (hot steam phase 20 minutes – prione programme). It is recommendable to purchase at least a second set of hand pieces and electrodes to enable sterile equipment to be available at all times. Hand pieces, cables and electrodes should be regularly examined for wear and tear. Please read the recommendations and comments in the instructions for use.

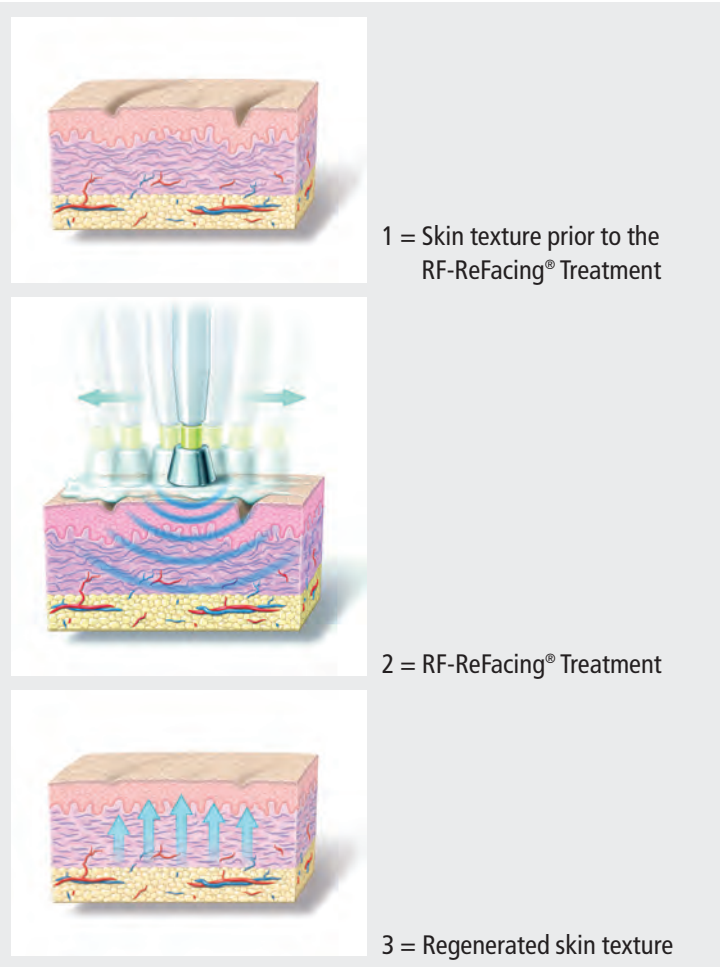
10. Contraindications for radio surgery

- a) All surgical contraindications
- b) Cardiac pacemakers
- c) Flammable vapors and liquids

FAQs – What you always wanted to know

11. What is RF-ReFacing®?

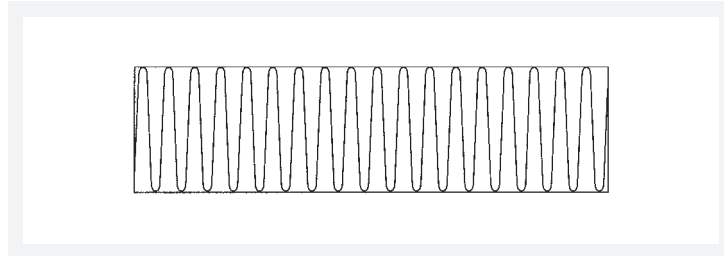
Firmer facial features and a smoother décolleté with radio wave energy! The energy reaches the dermis and causes a shortening of the structures that have become too long. With gentle heat production and stimulation of the fibroblasts in the deeper tissues, the reconstruction of collagen and elastin is initiated. Without stressing the epidermis the tissue is tightened in the depth – without pain, injection or hospitalization. More information material concerning this innovative anti-aging-method is available on our website: www.rf-refacing.com



Example of a RF-ReFacing® anti-aging-treatment: The patient was enthusiastic about her appearance after 4 treatments. She looks years younger.

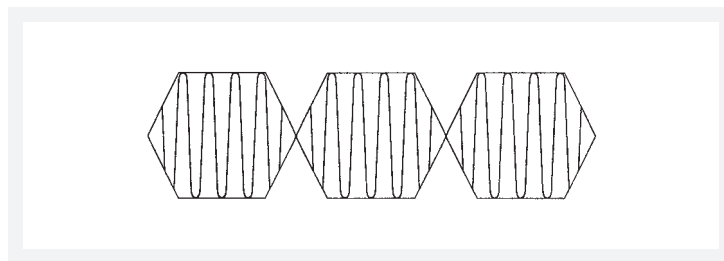
Three waveforms (currents) are available:

1 Cutting current (fully filtered wave)



The cutting current is the finest current and provides the smoothest cut, which leads to the quickest healing process. With this current better results can be achieved than with a scalpel, and should be your choice of current for all fine cuts. As this wave develops the lowest lateral heat only a few layers of cells evaporate. This current will be chosen when minimal cell vaporization is desired. Excisions taken with this current can be examined histo-pathologically.

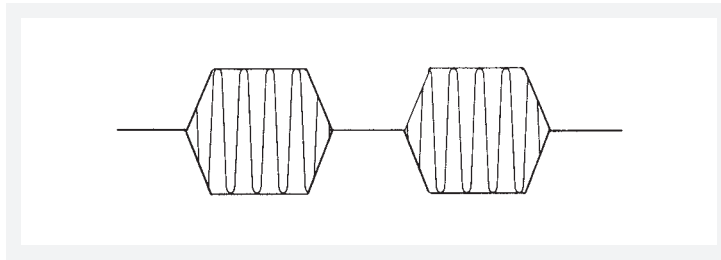
2 Cutting and coagulating current (fully rectified wave)



The fully rectified current simultaneously cuts and coagulates without necrotizing the tissue. Since this current produces a slightly higher lateral heat than the fully filtered wave, more cell layers evaporate. Simultaneous to the clean cut, coagulation along the cutting line takes place. The coagulation is so fine and gentle that only a whitish layer of coagulum is visible.

Three waveforms (currents) are available:

3 Coagulation current (partially rectified wave) Monopolar/Bipolar



This current is exclusively suited for hemostasis and has only a slight cutting ability. It is suitable for every kind of hemostasis:

- **Direct** (via electrode e. g. ball or thick needle) or
- **Indirect** (via clamps or forceps) or
- **Bipolar** (via bipolar forceps)

The **radioSURG® 2200** offers 4 varieties of this current:

- **Mono coagulation current:**
Permanent and pulse coagulation, adjustable coagulation degree
- **Bipolar coagulation current:**
Permanent and pulse coagulation, adjustable coagulation degree

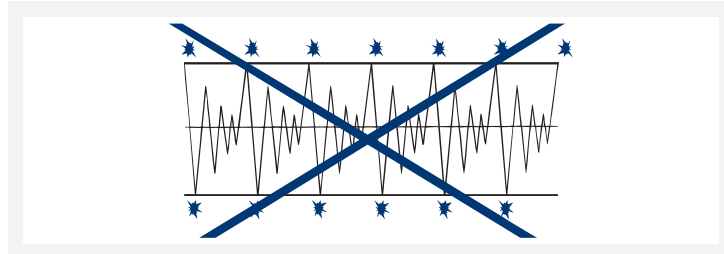
The coagulation degree can be adjusted from 1 to 9 according to the situation. Heavy bleeding = higher coagulation degree; weaker bleeding = lower coagulation degree. Hemorrhaging can thus be prevented.

The pulse coagulation revolutionizes hemostasis. During this process high power is applied for a limited time to the end of the bleeding vessel (adjustable from 0.05 to 0.45 seconds), causing an immediate protein clotting that "welds" the vessel. Unlike a vessel with a necrotic end, a "welded" one is not as likely to break open again.

Additionally the **radioSURG® 2200 "TPA"** offers an automatic switch-off for the use in ENT surgery and the bipolar setting 0 for bipolar preparation (e. g. via bipolar scissors).

Three waveforms (currents) are available:

Fulguration current



What does a fulguration current do, and why is it NOT installed in the radioSURG® 2200?

This current causes sparks without being in contact with tissue. It is installed for hemostasis in many units and is called "spray coagulation". As uncontrollable deep tissue destruction with necrotic margins occurs during this process, the fulguration wave is not installed in the **radio SURG® 2200**.



- 1 Cutting current
- 2 Mono coagulation current
- 3 Bipolar coagulation current

radioSURG® 2200

All units offer:

Extensive range of accessories
Adjustable coagulation degree
Adjustable duration of coagulation
Trigger exit for the adaption of a smoke evacuation system
Memory function
Monitored neutral electrode

radioSURG® 2200 "m"

the monopolar version

- for private practices performing minor procedures only
- for dentistry
- economically priced
- frequency 2.2 MHz

radioSURG® 2200 "TP"

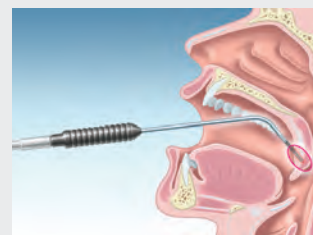
the universal unit

- for private practices performing minor and major procedures
- for the OR in hospitals
- monopolar and bipolar features
- frequency 2.2 MHz

radioSURG® 2200 "TPA"

the ENT version

- monopolar and bipolar features
- automatic switch-off for applications in the ENT field and bipolar mode 0 for bipolar preparations (e.g. with bipolar scissors)
- for private practices performing minor and major procedures
- for the OR in hospitals
- frequency 2.2 MHz



Theory is no use without practice!

A demo will convince you!



**radioSURG® 2200 and
smokeSTAR**

**The perfect match
in the OR!**

**Further information
can be found in the
smokeSTAR brochure!**

**"We have not invented radio surgery
but for its application
we have set new standards."**

CE 0044

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HF-Frequency: 2.2 MHz

High Frequency Power Max.:

Cutting 100 watt

Coagulation: 90 watt

Bipolar Coagulation: 99 watt

Measurements: L x W x D = 340 x 210 x 152 mm

Mass / Weight: 60 Newton / 6.0 kg

Colour of the Case: Whitish Aluminium RAL 9006

Manufacturer:

**MEYER-HAAKE**
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