PLASMAONE
COLD PLASMA +
CAPACITIVE DIATHERMY
HIGH FREQUENCY

The only safe and painless device for Superficial and Deep Regeneration of the Skin

INNOVATIVE
ECONOMICAL
PAINLESS
EASY TO USE
PORTABLE
Plasma, or the fourth state of matter, exists in various forms in nature and it can be generated in different ways. Cold plasma is used for applications in cosmetic medicine and dermatology.

Inside the handpiece there are the electronic circuits of adaptation RF used to generate the plasma. The RF electronic circuits of adaptation which generate plasma are inside the handpiece.

The discharges are generated by a radio frequency pulser with parameters controlled by a microprocessor: so it is possible to adjust the energy of the electrons and heavy molecules as well as the ultraviolet rays that are generated in the area being treated.

Other processes occur at the same time like the formation of ozone, a powerful oxidiser, ions, radicals and the strong electric field that destroys the membranes of bacteria and kills viruses, fungi and parasites.

The possibility to obtain microholes in the skin by varying the depth and density of it also allows to perform treatments that are similar but much less invasive than those done with a fractional laser.
The handpiece and electrode are one of the key parts of the device. The electrode, a result of long and accurate studies, is manufactured with a geometry such as to allow the physician to easily treat surfaces of any type and also to be able to reach the deep part of skin folds and wrinkles by simply changing its inclination. The electrode, one of a kind, is covered with a special coating that makes it biocompatible and particularly suitable for this use.
We can of course carry out all of the intermediate combinations, always with the same energy release, therefore at a temperature similar to body temperature (for this Cold Plasma).

If however, we increase the duty cycle and the power, we can get a more ablative effect, a more significant resurfacing, but in this case at the cost of a greater nuisance, with side effects which however remain significantly fewer than those caused by ablative methods (dermabrasion, peelings, CO2 laser).

By choosing a specific power it is possible to determine the depth of the lesion to be obtained.

With the same peak power and since the amount of energy released to the tissue can be represented as the area (duty cycle) whose base is the pulse duration and height is the peak power of the pulse output, it is possible to determine a very narrow and deep microhole (cold fractional plasma, with an effect similar to the fractional laser, which determines a deeper action in the skin, whilst leaving free most of the affected surface), or a microhole with a wide diameter and reduced depth, to perform a resurfacing action, useful in the treatment of superficial lesions instead of peeling, dermabrasion or ablative laser methods.

The following figures illustrate this concept well.

### THE PARAMETERS

| 01 | The **power**, which determines the depth of the microhole we want to obtain |
| 02 | The **duty cycle (or percentage of on)** determines the diameter of the microhole |

![Diagram showing the effect of power and duty cycle on microhole depth and diameter]
Unlike with needling and other methods that breach the skin barrier, since cold plasma is itself a method of disinfection, the microholes are sterile, so there is no danger of carrying the bacteria that are normally present on the skin surface deeper. Since the action temperature is slightly above body temperature, it does not even cause any redness nor any kind of discomfort.

By varying the repetition frequency (number of discharges/sec), you can switch from the fractional effect (fig. 1), to a moderate peeling (fig. 2), to a superficial peeling (fig. 3), by means of resolution of the SH bonds between the cells of the stratum corneum, and consequent peeling of the more superficial and worn out part.

This allows you to perform an electronic peeling, without resorting to the use of acids.

Hence the possibility of using cold plasma in any season (even in the summer when you cannot perform peelings), and especially on every skin type.

BREACHING THE SKIN BARRIER

The microholes, which before completing the repair process remain for almost a week, allow to apply substances such as cosmeceuticals, even better if in nanotechnology, to breach the skin barrier without the use of more invasive methods (injections, dermoelectroporation, iontophoresis, etc.).
Thus cold plasma can be used with excellent results in rejuvenation protocols, as well as in other cosmetic and medical applications.

For instance, for the rejuvenation protocol a first stage of cold fractional plasma is used, with deeper microholes with a small diameter, to stimulate the fibroblasts to produce collagen and hyaluronic acid.

The repairing closure of the microholes determines tension of the skin, giving it tone.

The second phase, that of electronic peeling, is obtained by increasing the frequency of discharges per minute, and can be superficial, medium or deep depending on the power (depth of the microhole).

This phase, which can also be repeated, serves to reduce stains, micro acne scars, microwrinkles, seborrheic dermatitis, and in general all those imperfections due to the increase of the stratum corneum and to chrono and photo aging.

Treatment with cold plasma can be followed by Capacitive Diathermy, another function of the equipment, innovative not only for its frequency which is much higher than all RF devices on the market, but it also has the feature of measuring in real time and with absolute precision the impedance of the treated tissue, allowing to release the energy that is actually needed and avoid overheating of the tissues.

The higher frequencies available in the device (short waves) are used for firming purposes. Various scientific studies have demonstrated that these frequencies stimulate the production of Heat Shock Proteins that replenish and replace the protein structures altered by thermal damage or free radicals.

With this new technology used in regenerative medicine, the highest temperature is 42° C, thus avoiding all inflammatory phenomena resulting from the effects of reparative fibrosis (type 1 fibrotic collagen).

Indeed, with Diathermy at lower frequencies (280/480 kHz long waves) without impedance controls and with great power it is easily possible to exceed 44/45° C thus determining the generation of fibrotic collagen.

The administration of capacitive diathermy is done through an ergonomic handpiece, with electrodes of various diameters, suitable to work both on wider areas and with more water content (buttocks, inner thighs, arms, abdomen), and on smaller and delicate areas that require more precise movements (face, neck, etc.).