



JONIX

JONIX Non-Thermal Plasma Generators

JONIX generators are exposed to the air flow, coming into contact with it by means of the outer electrode and the dielectric, transforming the gas into plasma.

Through the action of the electric field created by the generators, the electrons tend to accumulate on the surface of the dielectric, generating micro-discharges in the air, which in turn produce new charged particles.

The dielectric material prevents the development of discharges between the two electrodes that would damage the power supply circuit.

Non-Thermal Plasma (NTP) is considered to be the safest process for oxidizing and breaking down pollutants and for reducing of bacteria, mold, viruses, and odors. Applications in the medical field are growing, with considerable advantages over analogous systems:

- » low power consumption, minimal operating costs
- » in comparison to ozonation systems it is compatible with the presence of the operators
- » in comparison to UV systems its oxidation capacity is not affected by the crossing air flow speed
- » in comparison to systems containing electrostatic filters or photocatalytic filters, the sanitizing effect also takes place at a distance from the plasma source



Galletti's DUCTIMAX, PWN and UTN series ducted units use NTP Jonix technology to sanitize the flowing air, to carry out the microbial decontamination of the internal surfaces of the units, filters, and condensing coils, and to prevent the development of legionella in the condensate collection tanks.

The devices are sized according to their intended use, the air flow rate, and of the category of pollutants to be treated.

They are installed inside special plenums inserted on the air intake or outlet.

Indoor air quality

Air pollution in closed spaces represents a serious public health problem, with significant social and economic implications. Although the pollutants are present in concentrations that do not result in acute effects, they are the cause of negative effects on people's health and well-being, especially if connected with a long exposure period.

The international organizations WHO, Istituto Superiore della Sanità (National Institute of Health), ASHRAE, the Scientific Committee on Health and Environmental Risks (SCHER), and the European Commission in Science and Technology on Indoor Air Quality have stated that it is necessary to reduce the sources of contamination and reduce the concentrations of the pollutants included on the shared European list: Benzene, formaldehyde, carbon monoxide, nitrogen dioxide, naphthalene, volatile organic compounds, toluene, etc.

Operating principle of Non-Thermal Plasma (NTP) technology

The ionization of the air is a natural phenomenon that occurs spontaneously whenever a molecule is subject to the action of an energy process in which the total amount of energy is greater than that of the molecule itself. In practice when we add energy to a molecule, an electron is "removed" from the molecule's outermost orbit, and the resulting electric imbalance causes the molecule (atom) to assume a positive electric charge.

The electron "freed" from the outer orbit immediately attaches to another atom, which then assumes a negative electric charge. Each atom has a well-established probability of becoming a negative and positive atom depending on the saturation of its outer shell. In nature ions are produced by solar radiation; by the friction of the wind on the earth's surface; by storms, rain, and other weather events; by the absorption of cosmic rays; and by the collisions of particles possessing kinetic energy.

NTP technology artificially ionizes the air by means of what is known as "Cold Plasma".

The system is based essentially on the production of ionized gas, rich in highly "active" ionic species, which has a high chemical oxidation power, acting on:

- » proteins and unsaturated lipids of the cell membrane
- » peptidoglycans of the cell wall
- » enzymes, nucleic acids, and spores present in the cytoplasm



Functions and applications of the JONIX air sanitizing devices with NTP technology

- » Large scale retailing
- » Food processing industrial processes
- » Food preservation
- » Residential comfort
- » Service sector comfort
- Social welfare
- Hospital healthcare