

JONIX

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JONIX S.r.l.
Registered office
Viale Spagna 31/33 • 35020 Tribano (PD) • Italy • tel +39 049 9588511
Research office
Via Tegulaia 10/b • 56121 Pisa • Italy • tel +39 050 985165
Operating office
Via Romagnoli 12/a • 40010 Bentivoglio (BO) • Italy
e-mail: info@jonixair.com
www.jonixair.com

**ADVANCED OXIDATION PROCESS FOR AIR DECONTAMINATION
INDUCED BY NON-THERMAL PLASMA**



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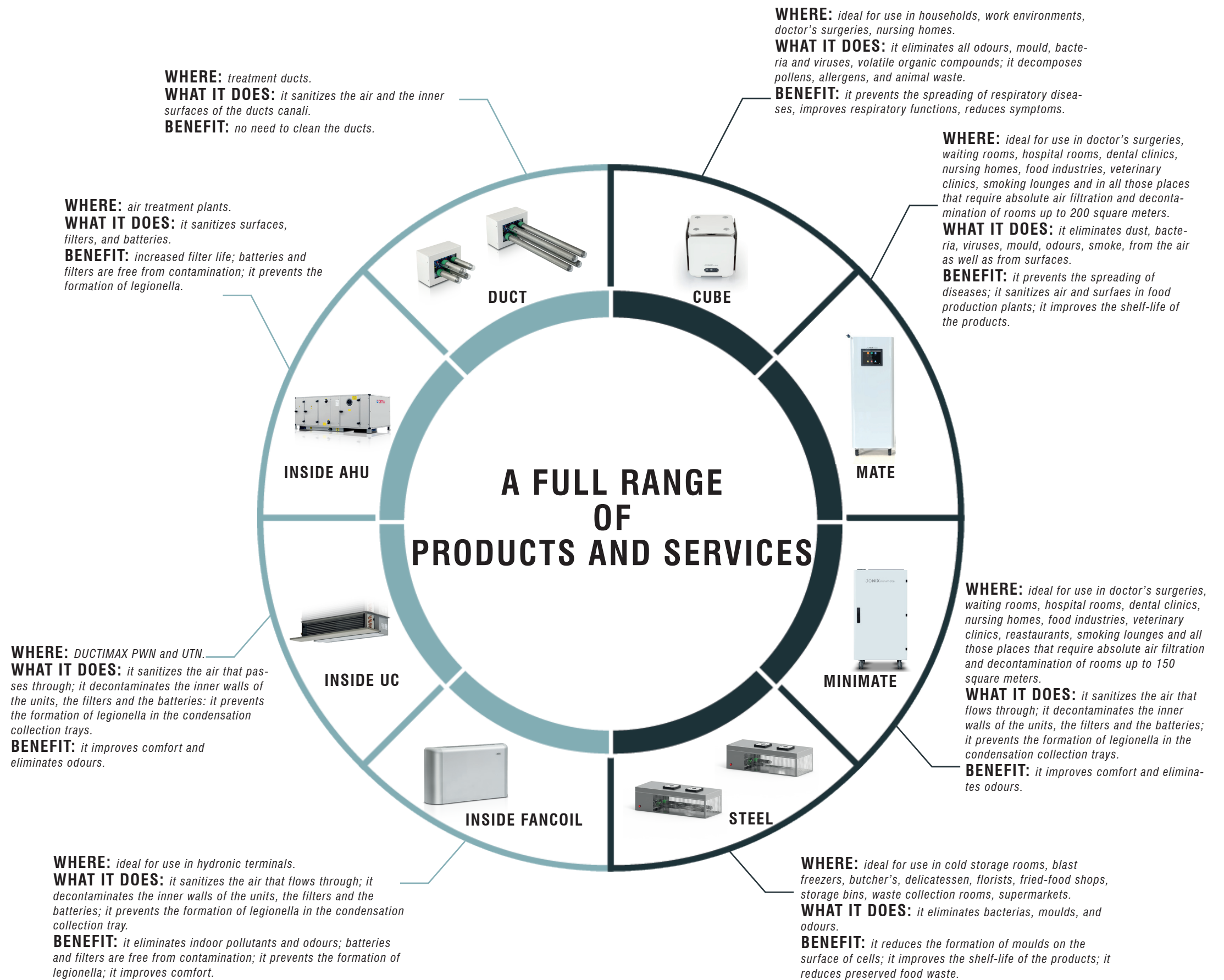
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INDOOR AIR QUALITY

Air pollution in confined spaces is an important public health issue, with significant social and economic implications. The high concentration of contaminants in such environments has a negative - albeit not acute - impact on the health and well-being of people, especially in case of long periods of exposure. The European commissions have established guideline values for the main indoors pollutants. Germany, France, Holland, Finland, Belgium and Italy have started monitoring and sampling the key indoor pollutants. On the matter of Indoor Air Quality, the World Health Organisation (WHO), the Italian National Health Institute, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), the Scientific Committee on Health and Environmental Risks (SCHER), and the European Commission for Science and Technology have concluded that it is necessary to reduce the sources of contaminations as well as the concentrations of the pollutants included in the shared European list.

Non-Thermal plasma technology (NTP)

Air ionization is a natural phenomenon which occurs spontaneously whenever a molecule is subjected to the action of an energy process in which the total amount of energy is higher than that of the molecule itself. In practical terms, when we add energy to a molecule, the latter "pulls" an electron from the outermost part of the molecule and, as a result of the electrical imbalance, the molecule (atom) takes on the positive electrical charge. The "freed" electron from the outer orbit is fixed immediately onto another atom that takes on a negative electric charge. Each atom has a well-defined probability of becoming a negative or positive atom depending on the saturation of the peripheral crown. In nature, ions are produced by solar radiation, by friction of the winds on the surface of the earth, by thunderstorms, rain and other atmospheric events, by the absorption of cosmic rays, by the collision of particles with kinetic energy. The NTP technology artificially creates ionization of air through the so-called "Cold Plasma". The non-thermal plasma is therefore a physical phenomenon generated at room temperature that uses the air as a gas mixture and turns it an ionized gas that consists of several electrically charged particles: Electrons, ions, atoms, and molecules that clash and produce oxidizing species; particle reactivity causes oxidation phenomena, which can decompose volatile organic compounds, bacteria, microorganisms, odours. It is considered the safest process to oxidise and decompose pollutants; the process is scalable, according to the sanitization requirements.



INDOOR UNIT • Biosafe quality validation
 STAND ALONE UNIT • Efficiency validation by the University of Udine