

## Scientific Description

PMOSafe harnesses the natural, proven disinfecting power of ozone, automating the disinfection of your indoor environment.

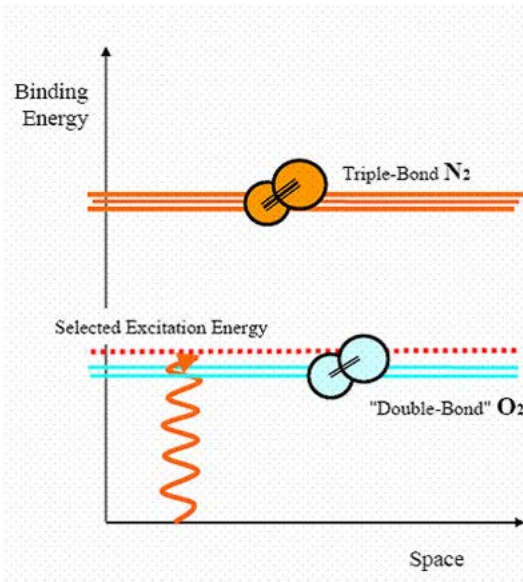
Unlike any ozone generation system created to date, PMOSafe produces and controls ozone in an end-to-end system that produces “clean” ozone using ambient air and a patent protected process. Then, by leveraging the existing air-flow of the target space, distributes it and monitors it 24/7 to ensure consistent, ever-present levels of clean, ‘air-scrubbing’ ozone.

PMOSafe’s proprietary ozone generation process applies only enough energy to the naturally occurring oxygen (oxygen accounts for approximately 20% of the air we breathe) to break the bonds of some of the oxygen molecules ( $O_2$ ), turning them into ions or single atoms of oxygen which then seek to bond with neighboring oxygen molecules creating a natural allotrope of oxygen called ozone. We call this process of generating ozone, Cold Plasma.

The PMOSafe Cold Plasma ozone generating process is vastly different than traditional ozone generation that uses what is known as a Corona Discharge (a high power ‘spark’ akin to lightening) or using the high-power radiant energy of UV Light. In both of these processes, the air is “burned” in order to create ozone.

This process applies considerably more energy than is required in the creation of ozone and as a consequence, create a host of unwanted by-products that are recognized as environmental pollution, most notably nitric oxides (i.e. NO and  $NO_2$ ).

The binding energy of the triple-bond electronic states of the nitrogen molecule (which is one of the strongest molecular bonds in



nature) is much higher (about twice the energy) than of the double-bond electronic states of the oxygen molecule. This relatively large energy gap between the binding energies of the nitrogen and oxygen molecules enable them to selectively excite only the lower energy states and thus to resonate only with the oxygen molecules.

Using this method, the nitrogen molecules are not excited and are not broken into nitrogen ions. Accordingly, there is no recombination of nitrogen ions with oxygen ions and/or molecules. Thus, **the formation of NO<sub>x</sub> molecules – which are harmful to people – is prevented.**

In addition, more than 80% of the energy is saved since it is not wasted on the decomposition of nitrogen molecules. Ionizing the oxygen molecules and thus breaking them apart into oxygen ions creates a “cold” plasma of oxygen ions. The term “cold” plasma indicates that the excitation energy, which is spent in the process of decomposition of the oxygen molecules, is absorbed only by the excited states of electrons binding the oxygen molecules, and is not wasted as kinetic energy of the heavy ions. Namely, the energy is absorbed only by the excited electrons which bind the oxygen molecules and not wasted to heat. Thus, the air is not heated (and stays “cold”).

This process creates a “non-thermal-equilibrium” in which only the electrons are “heated” while the ions stay “cold”.