

Natural Removal of Pollutants



Precipitation and reactions

Precipitation and reactions are the two main mechanisms by which pollution is removed naturally. This may take sub-seconds for some compounds whilst others may use hundreds or even thousands of years to be removed the natural way. Some compounds are not even ever removed, but rather in the end dispersed into the oceans, and may or may not end up in sediments; for most compounds though, nature has its own ways of processing them. The most important atmospheric oxidation is through reactions involving the OH hydroxyl radical.

Our cold plasma technology re-creates natural processes

The non-thermal plasma technology used by APP follow the same principles as those of a self-cleansing atmosphere, only at a much faster rate, where processing that naturally take days are reduced to sub seconds in a direct plasma reactor. In the picture above, one can see the main chemical chain-events for a natural oxidizing system. The non-thermal plasma system adds force to these events by creating more of the main constituents of the chains, e.g. ozone, hydroxyl-radicals and peroxy-radicals. For difficult emissions, a polishing stage could be added, and preferably one that follows along the same kind of philosophy as the non-thermal plasma. It is a dry method, has a rather small footprint and is cost-efficient. One such add-on would be a UV-system (Ultra Violet Radiation), which works synergistically with Cold Plasma. In the plasma zone molecules are bombarded by electrons creating ions and charged material. The primary created ions may generate secondary radicals, of which oxygen atom radicals and hydroxyl radicals (HO_x) are the most important. Further, the initial ions may also self-decompose, or work as a nucleation centre for creating condensates. Even more important, if the emission passes directly through the reaction zone of the plasma reactor, it may function as an electrostatic precipitator. In short, such a plasma system will boost the natural chemistry by generation of radicals, and it can actively precipitate charged condensates. In other words, a direct non-thermal plasma system works as a "turbo-atmosphere" where removal of chemistry is enhanced and works by natural means.

The APP Corona Reactor directly treats emissions in a non-thermal plasma zone. The APP direct treatment system has been evaluated by the European Union IPPC and is listed as a Best Available Technique.

Through a high focus on R&D, APP provides cutting edge solutions that can clean odours and particulate emissions; minimising attention from neighbours and ensuring compliance with local ordinances. By installing APP equipment at an early stage companies can avoid costly and damaging high profile conflicts.



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