



Alpha Power

Ozone

Corona Discharge - Ozone Based Room Air Sterilizer



Alpha Power

Ozone

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1. Ozone Introduction.

Ozone (O_3), an unstable, gaseous *allotrope* of elemental oxygen (O), is a strong, naturally occurring oxidizing agent. When ultraviolet rays from the sun strike oxygen molecules in the upper atmosphere, Ozone is produced, thus creating the protective Ozone layer around Earth shielding us from high levels of UV radiation.

Several tones of Ozone is also produced in each Lighting Strike occurs during thunderstorm which sterilizes the atmospheric air leaving a "fresh-clean - spring rain" like smell which we normally notice after thunderstorm rain. More over the feel of Freshness observed in the atmospheric air in a forest or by the sea or a waterfall is due to the presence of Ozone up to 0.1ppm.

2. How Ozone is Produced ?.

Two methods are commonly used for generating Ozone: *ultra-violet* radiation and *corona discharge*. Ultraviolet (UV) generators, used for low concentration air purification or on small water volumes with low demand, are relatively simple and economical but limited in output capacity. Corona discharge generators are required for use in commercial pools or other systems with high oxidizer demand.

2.1 Ultra-Violet Ozone Generator

Historically most Ozone generators used on small residential pools and spas have utilized the UV Ozone generation method where Ozone is produced by irradiating ordinary air with UV light at wavelengths below 200 nanometers (nm). Longer wavelengths (around 250 nm) of UV light are more efficient at destroying Ozone rather than producing it. When enough UV energy is added to an O_2 molecule, it splits, freeing two O_1 atoms to collide with other O_2 molecules creating Ozone (O_3).

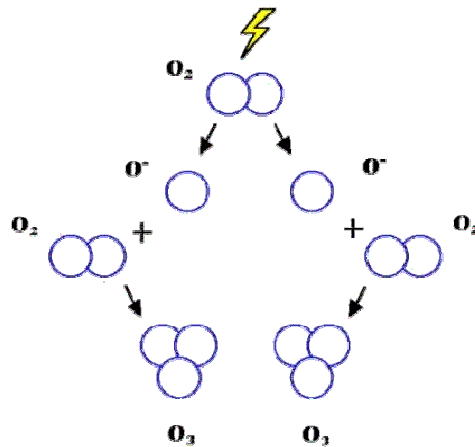


The Ozone output will depend upon the efficiency of the UV Radiation Tube practically the efficiency drops as the hours of operation increases so the Ozone production can be regulated only by adjusting the feed-gas flow.

2.2 Corona Discharge Ozone Generator

In a Corona Discharge (CD) system, Ozone is produced by passing oxygen-containing gas through a high voltage electrical discharge, or corona. A minimum of about 4,000 to the maximum of 15,000 volts at High Frequency of electricity is necessary to create the corona (10,000V is a practical design maximum voltage). Oxygen passing through the corona absorbs energy, splitting the O_2 bond and freeing two O_1 atoms to re-combine with other O_2 creating O_3 .

Applying High Frequency & High Voltage



Ozone production can be regulated by adjusting either the applied power or feed-gas flow. By reducing the feed-gas flow, Ozone concentration is increased, but overall production rate decreases. Reducing the applied power decreases concentration.

Recent technological advances in high frequency electronic power supplies have allowed Ozone generator manufacturers to develop small, efficient, economical and controllable Corona discharge Ozone systems that displace UV technology altogether.

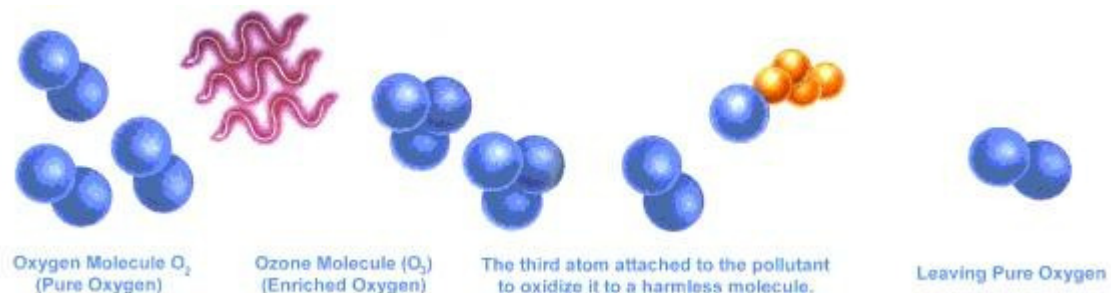


3. Ozone is a strong Eco Friendly Disinfectant.

Ozone (O_3) is an unstable compound generated by the exposure of oxygen molecules (O_2) to ultraviolet radiation or a high-energy electrical discharge. The weak bond holding Ozone's third oxygen atom is what causes the molecule to be unstable and makes the Ozone extremely Reactive & Vibrant Eco Friendly Oxidizing agent whose Oxidizing strength is 50 % greater & 3000 times faster than normal Chlorine.

Ozone will Oxidize almost all the Organic Oxidizable contaminants like Bacteria, Viruses, Moulds, and dissolved minerals such as Iron and Manganese present in the water.

Normally when ozone makes contact with the Organic contaminants such as Bacteria or Viruses molecules, the Ozone will attack the chemical structure (DNA) of the contaminants and destroy them permanently, accompanied by an eventual decomposition of Ozone into normal Oxygen as shown in the below schematic diagram .



Since the Ozone is generated electrically (Corona Discharge process) from Atmospheric Air / Oxygen air, no additional chemicals or consumables are required. Interestingly Ozone will automatically converts back into Oxygen (O_2) after the function of Purification & Sterilization without leaving any chemical residue, and thus makes the Ozone rated as the best Eco Friendly Oxidant / Sterilizing agent in the world .



4. Ozone Has Multiple Applications

The Eco friendly nature of Ozone paves the way for multiple applications where high level Sanitization and Hygienic standards are required.

- Packaged Drinking Water (Final Ozone treatment is ISI mandatory before the water is being filled in bottles or cans for drinking purpose – as a matter of fact we can able to notice the label of “ REVERSE OSMOSIS- UV TREATED – OZONISED” in all the packaged drinking water bottles).
- Surface Sanitation in Food Processing Industries.
- Swimming Pools and spas water treatment.
- Aquatic Animal Life Support Aquaculture
- Cooling Tower Water Treatment
- Odor Control & Smoke Elimination
- Fresh-Cut Produce Washing
- Mold/Mildew Control in Produce Storage
- Pulp Bleaching
- Laundry Water Treatment.
- Waste Water Treatment



5. Room Sterilizer - Salient Features RPS 1000 .

“Alpha Power” Room Air Purifier the salient features of the machines are as follows:

1. Portable and elegantly designed exclusively for easy carrying operation that can easily accommodated with your regular Room dressing / Cleaning equipments.
2. In-built with both Imported and indigenous components assembled for sturdy generation of Ozone output in the range of 0.5gm / hr (for atmospheric air) to 1.0 gm/hr (for Pure Oxygen feed).
3. The machine is equipped with Digital timer to control the ozone through, High Speed Air Blower having a delivery rate of 160 m³ / hr (1440rpm), which distributes the generated Ozone to the atmosphere evenly for a larger distance coverage rather than formation of localized high concentrated Ozone pockets (Since the molecular weight of Ozone molecules are High and tends to sink to the floors as soon as it was generated), manual trolley to easily dealt with the machine.
4. Under normal operating conditions the machine consumes very less power and generates very low noise level, with the help of the blower the generated Ozone will be evenly distributed to the atmosphere which sterilizes the room by killing the bacteria's and other micro organisms responsible for the development of Bad Odor in the Guest rooms.



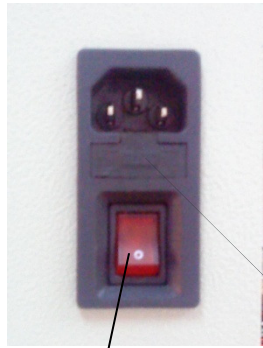
6. RPS 1000- Technical Specification

Ozone Production Capacity	0.5gm/hr to 1.0 gm/hr.
Supply Input	230VAC, 50 Hz Supply with Proper Earthing.
Power Consumption	200 Watts
Ozone generation Principle	Corona Discharge.
Electronic control	Microcontroller based intelligent system with for Ozone Generation & Digital Timer.
Air Input	Dry air—Approx. 5 to 10 lpm.
Weight	Maximum - 12Kgs
Noise Level	65 dB



7. Operating Procedure.

- A. The Ozone Generator is extremely easy to operate. Connect the power cord (supplied along with the machine) to the Ozone generator with 230V AC- 6A socket (50 Hz with Proper Earthing) and switch "ON" the supply.
- B. Once the machine receives proper power supply the red colour LED in the Elcom Switch will get illuminated along with the Blower will start throughing the air to the atmosphere.
 - i. If proper power supply is not received by the machine check the Fuse in the Elcom Switch, if necessary replace the same with 2A Glass Fuse.



Switch

Fuse

- C. To Switch on the Ozone Generation for the required time, the Digital Timer should be set accordingly (For Dirty Rooms 20 Mins for Normal Rooms 15 mins though the time of Ozone Generation should be purely based the Volume of the Pollutant presented in the rooms),



D. Digital Timer Setting :



This is a Digital Timer with 7 segments Display, used to set the ozone time. It consists of the following Buttons

- I. SET : Using this button we can set the ozone time.
- II. INC : Used to Increase the time of Ozone.
- III. DEC Button : Used to Decrease the time of Ozone.
- IV. ENT/RST : After Setting the Ozone time, press this button to save the changes.

E. **Once required time is set in the Digital Timer and run the machine for the set time and then the Ozone Generation will be stopped automatically, and keep the machine (Blower Running Mode) for another 10-20 mins or max of 45 mins so that the residual Ozone will get decomposed to Pure Oxygen in the atmosphere .**



8. Warranty

12 months for mechanical and electrical parts starting from the start-up but not later than 13 months from the delivery date, for replacing all those elements considered of faulty material or faulty manufacture. All the parts considered of faulty manufacture must be sent back to the manufacturer. The validity of Warranty is subordinated to a correct use and maintenance of the machine, as detailed in the instruction manual supplied with the machine. Every kind of Warranty lapses in case modifications and/or interventions not authorized by the manufacturer are made. Necessary free services will be made during the warranty period only at our factory site. The ONSITE Technician interventions during the Warranty period can be arranged with prior intimation with 7 days notice period at free of charge for the replacement/repair of faulty pieces as well as technician's working hours, except the daily pocket allowance of Rs 1000 / day /technician, Second class Sleeper fare TO & FRO from Coimbatore to nearest Railway Station and Lodging Expenses.

8. Service Assistance Contact Details.

Please feel free to avail Telephonic Service Assistance to the following contact details.

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