

S4-OZON-GEN

Ozone system generators

- **Water treatment and sterilization;**
- **Elimination of Legionella (patented system) from waters of communities, hospitals, hotels,...**
- **Treatments for private and public swimming pools;**
- **Treatments of sterilization for bottling (wine cellars, alimentary business);**
- **Treatment and purifying of water for domestic, civil and industrial use (private houses, hotels, restaurants, residences, ecc.)**
- **Air treatments: deodorizing – ambient sterilization**
- **Ideal for Civil protection and for bacteriological emergency, because it is easy to transport and immediately usable, and most of all, the patented ozone system by Multiossigen can completely eliminate all kind of bacterium's and virus as no other system can do. Our system can also eliminate substances as atrazine, iron, cyanides, BOD, COD, nitrites,...**



The ozone is the triatomic molecule of oxygen, and its chemical formula is O_3 . To temperature and atmospheric pressure it is a gas of light blue color, pungent smell also in minimal amounts (above by 0,05 ppm i). Ozone is formed in the atmosphere by the modification of oxygen caused by UV beams at short length wave, by free electrons and cosmic radiation. The Ozone produced by this reaction protects, from radiation, the inhabitants of the earth and is self-limiting autolimitante, since UV beams reconvert the ozone in molecular oxygen.

Ozone is an unstable gas, with a half-life in solution of some minutes and is the most powerful oxidant, used to destroy seaweed, bacteria, and to inactivate virus in addition to oxidizing many organic and inorganic contaminants.

Ozone germicidal activity is based on its high capacity as direct oxidizing: thanks to this quality, all the macromolecular structures of the cells, microbial or not (mould, acetic bacterium, *eterolattici*, *apiculati* yeast) are deeply altered and inactivated. No microbic species can survive, even though it produces spores or cysts. In any case, the germicidal action is fast, complete and without any residual effects. It gives very good results against Legionella and many species of bacterium, as, for example, Pseudomonas *Areuginosa*, that resists to chlorine even in high concentration.

This germicidal action isn't influenced by PH, temperature (which in some waters seems to be quite low) , so, as it isn't much influenced by the contemporary presence of organic substances.

The disinfectant action of ozone is not limited to bacterium (and to their spores) and virus, but also to other organisms. Thanks to its powerful oxidizing effect, it is possible to break even complex molecule. So, this action is extremely important. In fact, there its to this powerful effect (second only to flour) it is possible to eliminate highly poisonous aromatic composts or *etero* aromatic, that are destroyed and can be removed.

The possibility of washing piping with ozonized water, is known avoiding so, the use of polluting composts often chemical and poisonous, accused of being carcinogenic. This washing with ozone assures the absolute piping disinfection and guarantees a perfect absence of smells or residual substances.

Contrarily to chlorine and the several chlorine derivatives, ozone not only has an action on bacteria but also on virus and the spores. During its sterilizing action, ozone acts directly on bacterium, inducing on the mass of bacterial proteins a

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catalytic oxidizing process, differently from chlorine, that would act through a poisoning enzymatic process typical of vital centres, process that needs a bigger pause for the diffusion inside in the cytoplasm. Concerning the bacterial action, it's interesting to consider that with a residual ozone rate of 0.3 ppm and with a time of contact of 4 minutes, the percentage of inactivation of virus originally present is 99,99%.

Contrary to other products, as for example chlorine, ozone hasn't got any limits to its action.

It develops molecular oxygen while it proceeds to the elimination of the macromolecular organic in solution that would produce taste or smells unpleasant in to the water.

Ozone, even though in strong doses, after a few minutes of contact, becomes oxygen, without any danger or negative actions, but enriching water whit oxygen.



Mean of transport equipped with a water system of purifying adapt to Civil Protection

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OZONE GENERATOR

Ozone is generated by a silent electrical discharge, in an alternated field of high tension. That discharge divides a part of the oxygen molecules which electrify the discharge zone. Oxygen atoms get together with the other oxygen molecules forming triatomic ozone. The ozone concentration is usually expressed by the relation between ozone weight produced and gas value in exit (g/Nm) .

Our ozone generator use oxygen present in the air, and so don't need to be stocked by an oxygen bottle, eliminating the need to find the oxygen.

The air, after being filtered and dehumidified is carried through a compressor that puts it in special glass room where the electrical discharge necessary to the oxygen dissociation and the consequent ozone formation is produced.

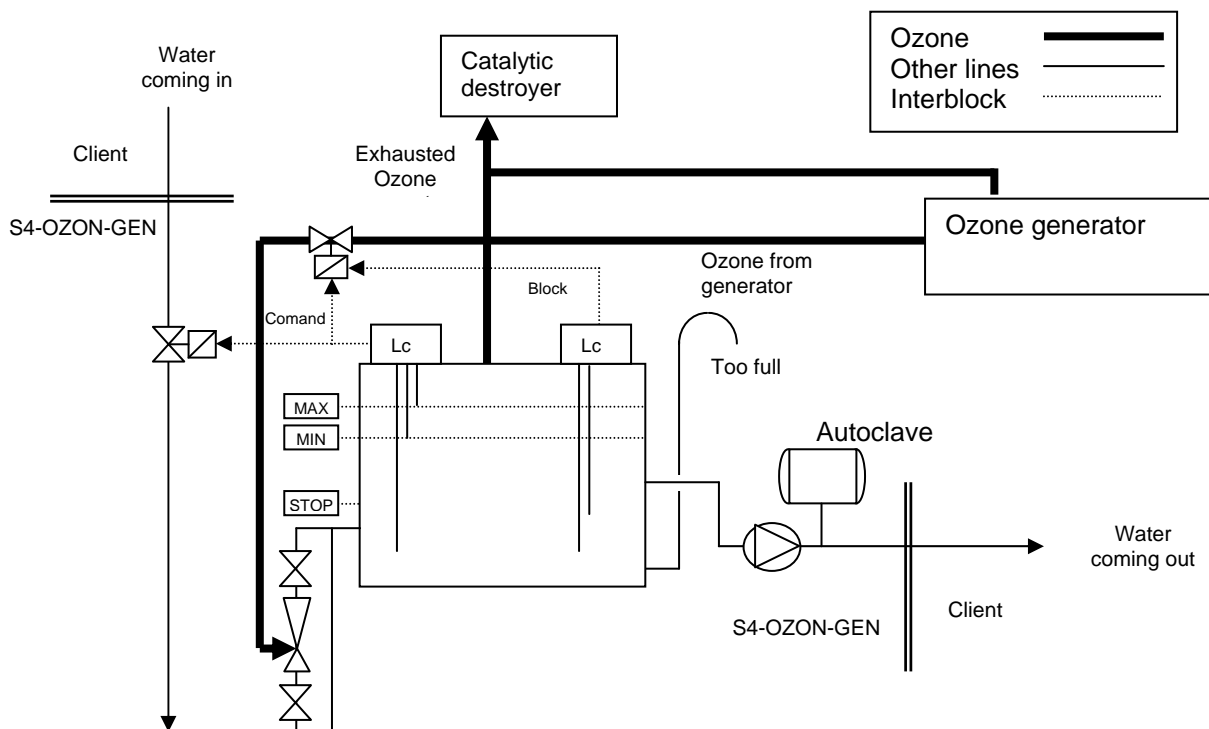
The gas produced is immediately mixed to water in a contact tank through some suitable diffusers. The generator is supplied together with the system of elimination not used of residual ozone, as guarantee of safety of use.

It can also be provided with some accessories as the ozone gauge used in water, and the ozone surveyor used in air.

BASE STRUCTURE

- 1- An square, chosen in according to the necessary ozone quantity, together with a compressor and a dryer
- 2- A small tank suitably on purpose dimensioned, ozone compatible, destined to give the necessary contact time
- 3- A system of levels to manage water coming in according to its use
- 4- An autoclave to send water to the system, also built with ozone compatible materials
- 5- An ozone and water mixing device, usually of a diffusion or VENTURI kind
- 6- An ozone eliminating device for the amount of unused ozone

To install the generator easily, the system is completely autonomous, and provided with a CE P+N+PE a 16A plug, and standard hydraulic connections for the connection to the piping



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Functioning of the Machine

The machine S-AB is studied to be directly installed in the point of water's supplying of the system that you need to provide.

Installation is easy and fast: it needs only the connection of entry and exit of water and a plug. There's no need of any other operation than pressing a button.

The machine has got a tank of 1m³ on which is installed a system of levels and in exit a pump with a 100 lt. autoclave dimensioned to supply the system you need to provide.

When you use water, pressure in the autoclave gets low and allows the pump to work. That pump, sending water, the level gets down in the tank. If it gets down under the level indicated with MIN, the valve of water supply gets opened up until it reaches the level indicated with the picture MAX. During this opening, moreover, the picture of ozonization gets active, producing air enriched of ozone that is mixed to water through a system of gurgling or a Venturi blender, according to technical requirements.

Ozonizator picture represents the heart of the system, and produces ozone, from oxygen through electric discharges of high voltage, inside suitable generators. The air is blown through an oil-free compressor, and, to have maximum efficiency of transformation is dried before being used for ozone production. The dimensioning of the ozonization picture is efficient basically on the max range that the client wants to have, following standard pattern.

Exhausted ozone that didn't bind to water comes out of the venting of the tank and is conveyed to a thermo catalytic destroyer that is meant to disinfect water, which can thus be discharged in the atmosphere.

The tank is provided also with a discharge tube of too full under shutter, useful in case of uncontrolled trouble or water overflow. A system of block of min. level prevents total emptying of the tank, blocking both the pump and also the ozonization picture, thus preventing any damage the pump of the autoclave, and uncontrolled ozone emission from the tube of too full, because it maintains it always under shutter.

The system includes also the possibility of a functioning called manual, in which the ozonizator is always on independently if water is being recalled or not. This function allows costumers to have an iper-ozonization of water, that can thus be used for recurrent disinfections of tanks/piping.

Ozone benefits in water treatments

- It is active against bacteria, virus spores, protozoic cysts ,...
- It Oxidizes heavy metals (iron, manganese, ion sulphide, ion cyanide, ion nitrite), hydro sulphuric acid and generally all the organic substances containing multiple sewages.
- It is used to destroy some forerunners of halogen derived, and also for the degradation of organic micro polluting that can be present after the purifying treatment with other substances.
- It is efficacious in wasted water to destroy BOD with a notable reduction of COD.

ACTION	CHLORINE	OZONE
SMELL	UNPLEASANT	NONE
TASTE	UNPLEASANT	NONE
COLOR	ALMOST YELLOW	CRYSTALLINE
ANTIVIRAL ACTIVITY	NONE	HIGH
ANTIBACTERIAL ACTIVITY	VARIABLE	WIDE SPECTRUM
DESTROYING ACTIVITY (WEEDS – PROTOZOI)	LIGHT	HIGH
DESTROYING ACTIVITY(MYCETES)	LIGHT	HIGH
DESTROYING ACTIVITY (SPORES AND CYSTS)	LIGHT	HIGH
ACTIVITY ON ORGANIC MOLECULES	NONE	HIGH

TECHNICAL CHARACTERISTICS

Standard capacity

1000 liters

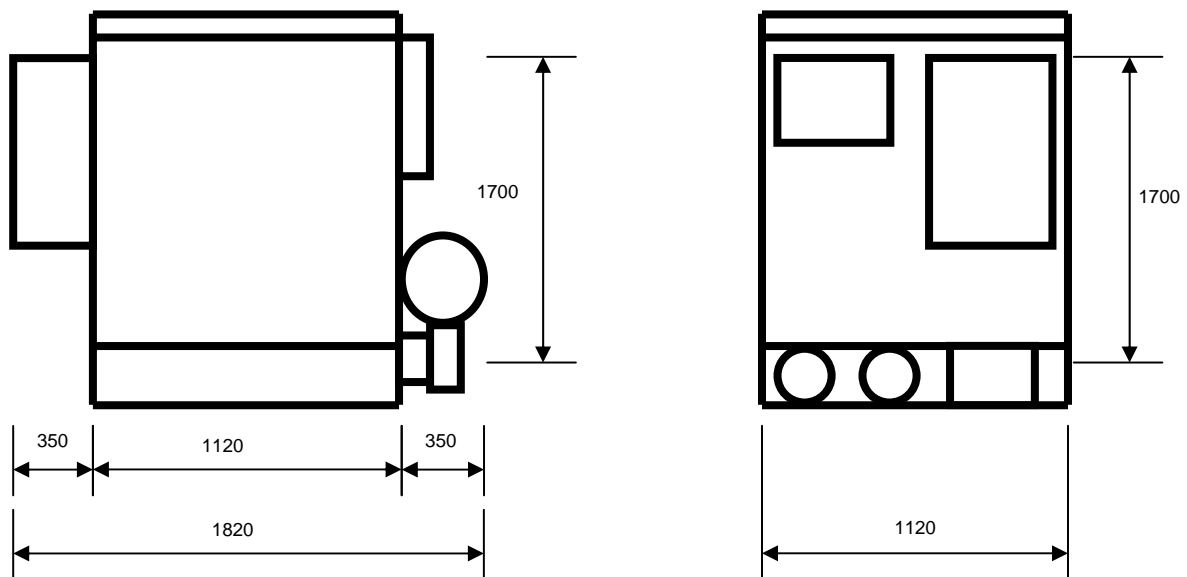
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Nominal tension for use (Ue)	230 Vac P+N
Nominal frequency(f)	50 Hz
Max installed power	1000 W
Nominal current (In)	6 A
Short conditioned current circuit (Icc)	10 kA
Presence of inner electric circuit of nominal tension	12300 V
Max resistance on earth admissible for TT systems	1555 OHM
Protection against direct contacts using barriers or wrappings	
Protection against indirect contacts using protection circuits	


DIMENSIONS



Weight as empty 250 Kg.

Ozone compatibility with other materials

Ozone has a high oxidizing power. Added to water it creates a mixture of highly corrosive power. Before installing the ozone generator it is better to consult the suitable table to verify the compatibility of the materials used in the system, if necessary referring to our service of technical assistance.

CONFORME ALLA NORMATIVA 

CONFORMS TO  STANDARDS

La Multiossigen srl si riserva la facoltà di apportare modifiche tecniche alla strumentazione senza preavviso.
STEIEL Elettronica srl can modify the instrument's technical features without advance notice.

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