



Laundry*PLUS*

OXONE TREATMENT SYSTEM

Low Temperature Ozone Disinfection System

Industry proven • Saves energy costs • Improves fabric look, feel and life • Start saving money immediately

Ozone Treatment System For Laundries

The new solution for Laundries

For many years ozone (O₃) has been a key element in water treatment and bottling, providing disinfection and purification. The use of ozone in commercial laundering is growing rapidly where studies confirm an over 99% bacterial and viral kill count – making ozone a 150% more powerful and 3000 times faster than chlorine. At the same time ozone significantly lowers operating costs, reduces chemical usage, and leaves no residues - so it is kind to the environment too!

Ozone technology brings real benefits to the commercial laundry:

- *Low Temperature Laundry Disinfection*
- *Dramatically reduces hot water usage*
- *Reduces chemical usage*
- *Environmentally friendly*
- *Thoroughly disinfects the wash water*
- *Increases whiteness and improves fabric quality*
- *Reduces drying time*
- *Improves environment for laundry workers*
- *Extends life of linen*
- *Reduces incidence of bed sores*

The Ozone Industries Laundry Plus system is designed and engineered to be fitted externally to washers – no holes, no internal hoses, no bother - and is available in a range of sizes to suit large and small laundries.

Ozone In The Laundry

Low Temperature Laundry Disinfection

Ozone is a powerful disinfection chemical that is an effective disinfectant and able to destroy most viruses, bacteria, moulds and spores. The system has been tested at the NHS Queen Elizabeth Hospital : Infection research Laboratory.

Assessment Of The Microbicidal Efficacy Of Ozonated Water

Test organisms

Clostridium difficile • Staphylococcus aureus • Enterococcus hirae

Results

Test organism/conditions	Initial log ₁₀ count	Log ₁₀ reductions obtained after		
		1 min	5 min	10 min
1. C. difficile + organic load + antifoaming agent	6.56	>4.56	>4.56	>4.56
2. C. difficile + organic load + antifoaming agent	6.56	1.72	>4.56	>4.56
3. C. difficile (no organic load)	6.56	1.48	>4.56	>4.56
4. C. difficile (no organic load)	6.56	1.86	4.08	4.26
5. Staph. aureus (no organic load)	7.04	>5.04	>5.04	>5.04
6. Staph. aureus (no organic load)	7.04	>5.04	>5.04	>5.04
7. Ent. hirae (no organic load)	7.70	3.48	>5.70	>5.70
8. Ent. hirae (no organic load)	7.70	5.53	>5.70	>5.70
9. Staph. aureus + organic load	7.04	>5.04	>5.04	>5.04
10. Ent. hirae + organic load	7.70	3.21	4.48	4.48

Current EN standards for disinfectant testing state that a >5 log₁₀ reduction is required for bactericidal efficacy and a >3 log₁₀ reduction for sporicidal efficacy

Using ozone in the Laundry process offers many further significant benefits:

Drastically reduces hot water usage

Because of ozone's tremendous oxidising ability, which increases the cleansing capability of the wash chemicals used in the laundry, the wash water temperature can be significantly reduced. Conventional washing methods typically require a temperature of 140°F to 160°F . With the use of ozone, the wash water temperature is reduced to not more than 90°F to 95°. All other cycles can be run entirely with cold water. By using ozone, an actual saving of up to 95% in hot water usage can be realised, depending on local groundwater temperatures. Ozone actually works better at lower temperatures due to its increased solubility.

Reduces chemical usage

Chemistry can be reduced and still be more effective with the use of ozone. Besides saving money on chemicals, using fewer chemicals means that the number of rinse cycles is reduced, thereby saving water (and sewer) bills and enhancing machine productivity (and useful life). The reduction of harsh chemicals in the laundry room also improves worker safety.

Reduces incidence of bedsores (decubitus ulcers)

The use of harsh chemicals in the wash is known to be a contributing cause of bedsores (pressure ulcers). Alkali and bleach residue in the linen fibre elevate pH levels; the use of ozone helps maintain neutral pH levels, thereby reducing the incidence of bedsores

Thoroughly disinfects the wash water

Worth mentioning again, ozone has an incredible and powerful ability to virtually wipe out all forms of harmful microbial contaminants like E.coli, Listeria monocytogenes, Salmonella, Giardia Lamblia, Cryptosporidium and pathogens in blood from the soiled laundry.



Noticeably improves fabric quality

Customer testimonies confirm that the comparative results are immediate and sometimes dramatic as to the quality of laundry washed with ozone verses conventional methods. Customers report: "Not only is the laundry much whiter and brighter, but it is also fluffier". "You can stack towels and washcloths washed in ozonated water next to a stack of the same number washed in non-ozonated water and the ozone treated pile will be twice as high". Laundry is "fresher smelling" and more sanitary than traditional methods of washing.

Improves laundry room environment for workers

By reducing or eliminating hot water and shortening drying times, the comfort of the employees increases because of the cooler working conditions.

Reduces drying time

Ozone opens the fibres of the fabric allowing more water to be removed in the extraction cycle. Therefore, the laundry contains less moisture upon removal from the washer, thus reducing the prescribed drying time, further saving energy cost.

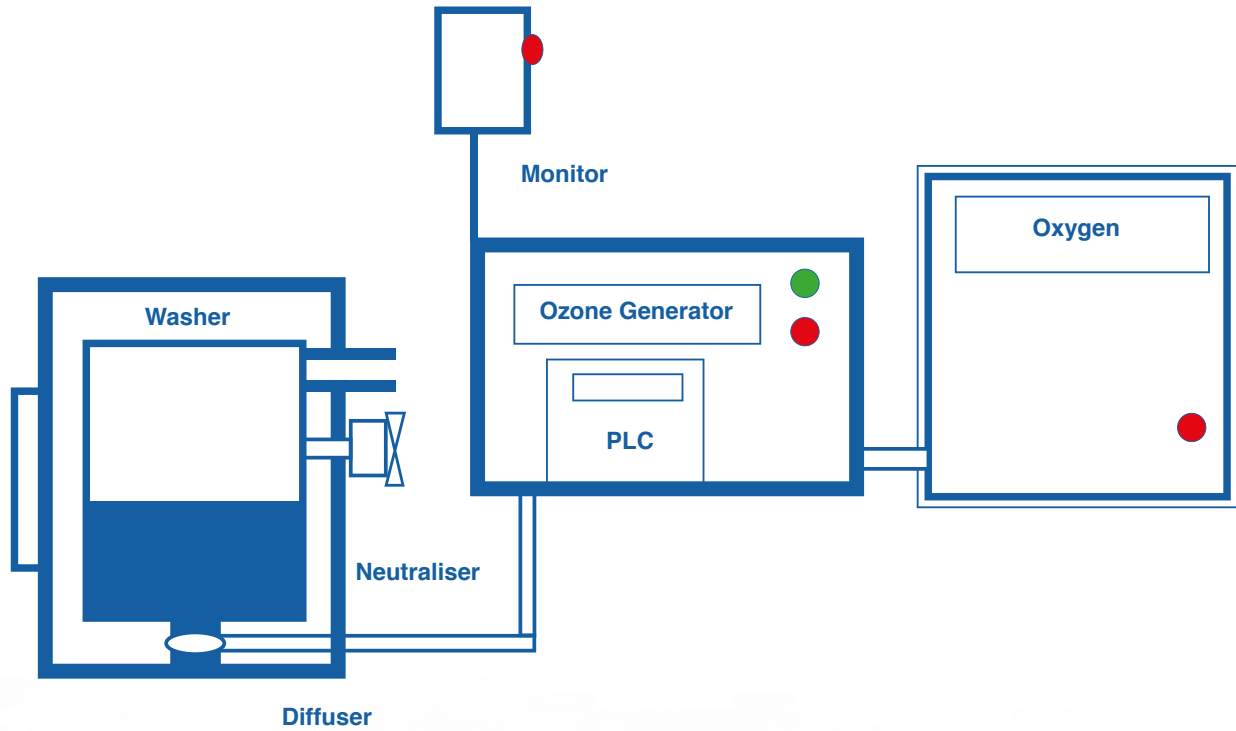
Actually extends the life of linen

Linen laundered in ozone experience longer service life. It has been estimated that the life of linen can be extended as much as 25%; mostly due to reducing or eliminating many of the chemicals harmful to textiles. Another contributing factor in extending the life of the linen is the reduction of rinse and dryer cycle times in the laundry operation.

The Professional Laundry System consists of two major components: the oxygen concentrator and the ozone generator packaged in a single all stainless steel housing. These components are 'state of the art' electronic devices offering maximum reliability and efficiency, even in the harshest of environments. The oxygen concentrator provides the ozone generator with a supply of a minimum of 95% pure oxygen. The ozone generator converts the oxygen to ozone using a corona discharge method. The Laundry Plus® unit is typically mounted on the wall in close proximity to the washers. This negates the need of using any valuable floor space.

The Laundry Plus® systems are available in a variety of models depending on the size and number of washers to be integrated to. The Laundry Plus® systems are designed and engineered so it is externally connected to the washers. There are no holes drilled into the wash wheel or any hoses that are inserted into the washer. The Laundry Plus® systems are connected in-line to the incoming water supply and the input cold water line of the washer. Installation is simple and the time it takes is minimal. All conversions are 100% guaranteed. We will determine your expected savings prior to installation and you must be completely satisfied with the performance of the system.

Ozone Laundry System



An Introduction To Ozone

The use of ozone (O₃) in commercial laundry is rapidly expanding because of ozone's proven ability to perform as a powerful disinfectant, killing viruses and bacteria like nothing else known to science while dramatically lowering operating costs. Because of the ever increasing costs of energy and environmental concerns, commercial laundry operations can now take advantage of cost saving ozone technology.

Ozone simply put ... with a brief history

We have all heard of ozone, yet most of us may know very little about what ozone really is or how it is produced. It is after a thunderstorm that we most commonly experience the effects of naturally occurring ozone, which we can describe as the "smell of fresh air". Ozone also occurs in the upper atmosphere where oxygen interacts with the ionising radiation of the sun. Just as ozone is produced naturally, it is also produced by man-made means for industrial purposes.

The industrial use of ozone has actually been around for over a century. In the early 1900's, Europe first implemented the use of ozone commercially for the purification of municipal drinking water. Now, many municipal water-treatment facilities world-wide are utilising ozone water treatment systems including Los Angeles County, which operates one of the largest water treatment systems in the world and has used ozone sanitation since 1948.

Today, with the many water-bottling companies in existence (with sales of over \$6 billion in the US in 2001), ozone is the essential and primary disinfecting agent in the purification process. Ozone makes the bottled water aesthetically pleasing, improving its taste and smell, while also increasing its storage stability. Ozone is also now taking the place of chlorine in swimming pools (including the Olympics), eliminating the smell and irritation associated with harsh chemicals. The popularity of ozone is growing daily.

Ozone systems were first introduced to commercial laundries in the United States in 1991. Since its introduction, much effort has gone into the engineering and design of today's ozone systems, now offering proven optimum performance and reliability. With the high cost of energy, along with the latest ozone equipment design improvements, the benefits of ozone in the laundry operations are only now being fully realised. Commercial, industrial and institutional laundry operations are, more than ever, looking for cost saving strategies to hedge themselves against the rising cost of utilities.



The power of ozone

Extremely unstable, ozone cannot be stored in any manner and, therefore must be generated onsite.

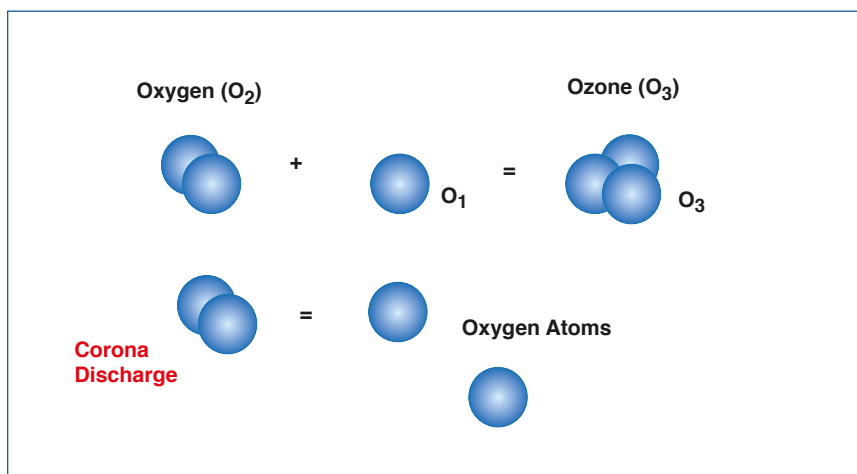
Ozone is a powerful biocide allowing it to control odours, kill viruses and wipe out bacteria. Studies confirm a 99+ percent bacterial and viral kill count from ozone laundering. Ozone, in fact, when used in the laundering environment, is 150% more powerful in disinfecting than chlorine, killing bacteria up to 3000 times faster. Ozone whitens and leaves fabrics noticeably superior over conventional laundry methods.

Nitrogen and sulphur compounds can cause odours in soiled laundry. Ozone, as a powerful deodoriser, breaks down the bonds that hold the odour molecules together, thereby eliminating the odour. Ozone will virtually attack and destroy any odour causing microbes.

The chemistry of ozone

Ozone (O_3) is an allotropic form of oxygen gas having three (3) oxygen atoms (triatomic) as opposed to normal diatomic oxygen (O_2), a constituent in the air we breathe having two (2) atoms of oxygen. Ozone (O_3) is produced when an electrical charge, such as lightning or corona discharge, molecularly disassociates a stable molecule (O_2) splitting it apart leaving two unstable atoms (O_1) of oxygen. These two single atoms of oxygen seek out and attach themselves to stable O_2 molecules thereby combining to become ozone (O_3). In the absence of oxidisable substances, ozone decomposes to form oxygen - in the presence of oxidisable substances traces of CO_2 will also form.

Ozone itself is a virtually colourless gas with an acrid odour and, as mentioned earlier, it is one of the strongest known oxidants, with an electrochemical oxidation potential of 2.08 V.



With the mention of “ozone levels” from smog within our cities, we may often have the impression that the use of ozone gas might be bad for the environment – this is not so. Because ozone is made of oxygen and reverts to pure oxygen, it vanishes without trace once it has been used (oxidised). Compare this with other disinfectants.

Regarding air pollution in larger cities, ozone can be formed when a mixture of O_2 and NO_2 is exposed to bright light. The concentration of NO_2 in air is usually very low, because N_2 and O_2 do not react at normal temperatures. However, reacting gases inside the cylinders of hot internal combustion engines, nitrogen and oxygen can react. The NO (Nitric Oxide) formed inside automobile engines reacts spontaneously with O_2 in air to form NO_2 . Nitrogen dioxide is a red-brown gas that dissociates when it is irradiated with bright light. The oxygen atom formed in this process attaches to a molecule of O_2 , forming ozone. On sunny days where NO_2 pollution from traffic is high, the concentration of ozone in the air can reach significant levels.



Unit 3. Regents Court, South Way, Walworth Business Park, Andover, Hampshire, SP10 5NX.
01264 369923 | info@ozone-industries.co.uk | www.ozone-industries.co.uk

Industry proven • Saves energy costs • Improves fabric look, feel and life • Start saving money immediately