



Conservation Solutions Corporation
The Energy & Water Conservation Professionals

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Laundry Opportunities

- Does reducing hot water costs for your laundry by as much as 90% make sense?
- Does water and sewer costs savings of $\pm 20\%$ fit into your budget?
- Conservation Solutions meters the laundry water and energy use before the OzoneSolutions products are installed to obtain a base line of energy and water use. This is compared to the energy and water use after the OzoneSolutions products are installed. The savings results are measured and proven so you get what you pay for.
- Is the laundry overheating making working conditions for employees uncomfortable and less productive? You can save money and improved working environment for laundry employees with this technology at the same time.
- If you could reduce laundry costs while at the same time accomplish the following:
 - Reduced dryer time, temperature, and lint
 - Reduced linen budgets
 - Linens are whiter, softer and smell better

Let Us Know When We Can Get Started....

Customer Support



Conservation Solutions Corporation and OzoneSolutions provide a complete turn-key laundry ozone systems. We combine ozone technology along with laundry operation consulting in starting up a laundry ozone systems. The success of a laundry ozone system is dependent on:

- Proper Ozone Levels
- Proper Chemicals
- Proven Ozone Washer Cycles
- Scheduled Preventative Maintenance

In addition to providing a successful installation OzoneSolutions continues their customer support with scheduled preventative maintenance checks to maintain the laundry ozone systems continued operation.



LAUNDRY OZONE BENEFITS

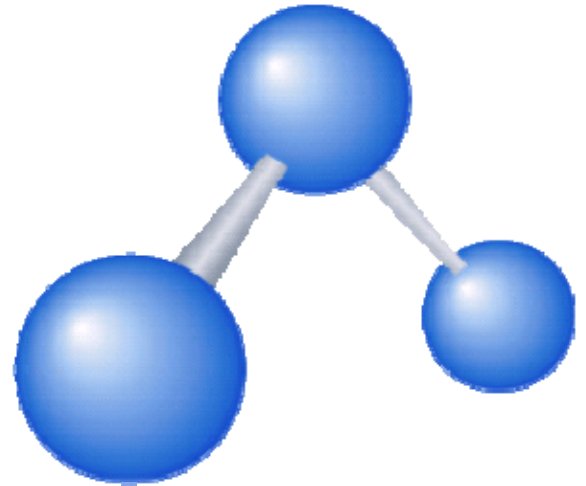


- 25 to 50% reduction in total water usage
- 90 to 98% reduction in hot-water usage
- Reduced linen replacement budget
- Reduction in man-hours
- Ozone reduces maintenance, protects equipment
- Linens are whiter, softer and smell better
- Reduction in dryer time, temperature, and lint
- Ozone destroys bacteria and inactivates viruses and cysts
- More effective against microorganisms (200~3000 times)
- Strongest oxidizer next to elemental Fluorine
- Ozone enhances chemical reaction in the wash wheel for superior cleaning
- Conserves natural gas and water.
- Improved working environment in the laundry room



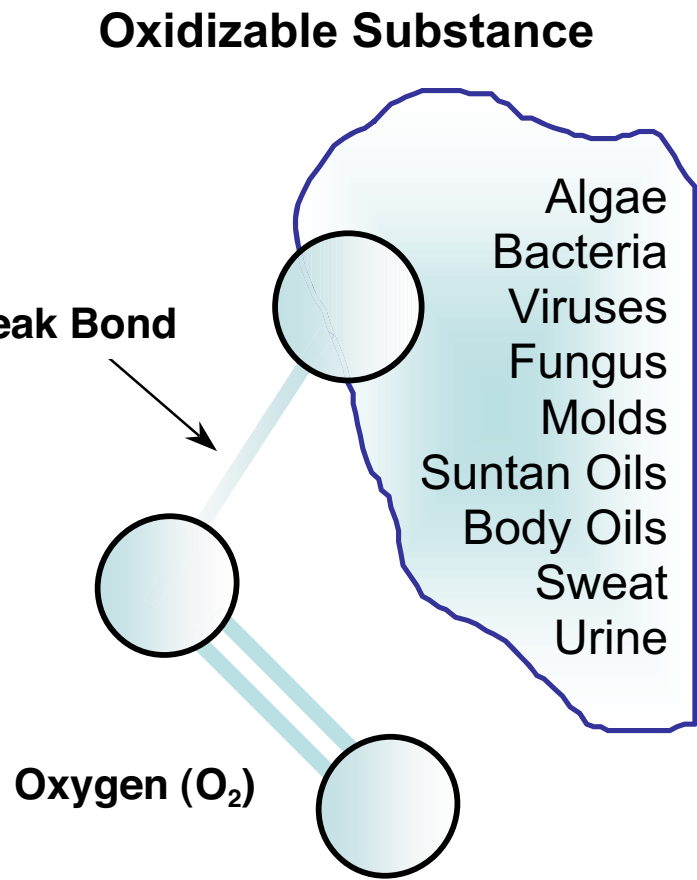
What is Ozone?

- Ozone is a ***PURE*** oxidizer
- Occurs naturally in Earth's atmosphere
 - UV from the sun
 - Lightning
- Each ozone molecule consists of three oxygen atoms (O₃)
- Ozone has a clean, fresh scent often noted after a rainstorm.
- Life safely exists thanks to the protection of the ozone layer.
- There is a small amount of ozone in the air we breathe.
- Ozone is NOT a pollutant but an index of pollution gasses



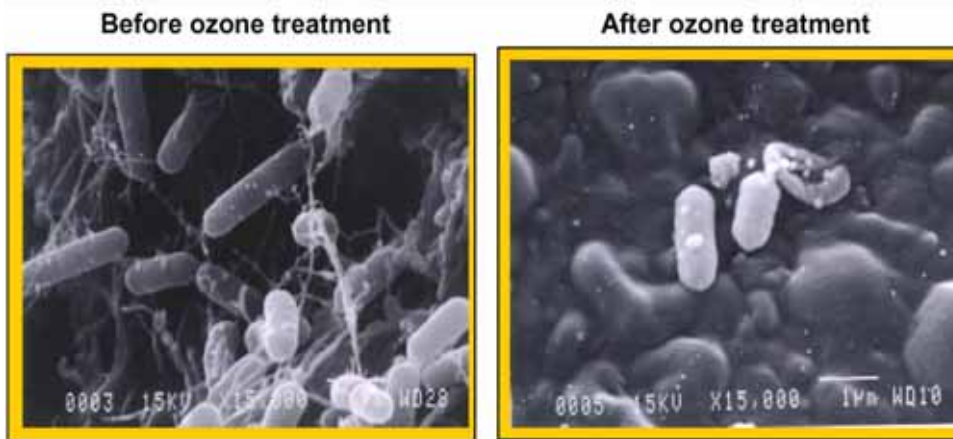
How Ozone Works

- The third oxygen atom is held by a weak single bond.
- Oxidation occurs upon any collision between ozone and a molecule of an Oxidizable substance
- Weak bond splits off leaving oxygen, O_2 , as a by-product.
- Organic molecules are changed and dissolved metals rendered insoluble.



How Ozone Works

- Oxidation breaks down chloramines and other chemical by-products.
- Oxidizes minerals dissolved in water allowing filtration to remove them.



- Oxidation Kill of all known micro-organisms
 - No resistance to kill
- Micro-flocculation process
 - Partial oxidation of organics
 - Forms long molecular chains that are more filterable
- Continual Shock
 - Carries out higher order oxidation reactions



THE LAUNDRY OZONE TECHNOLOGY

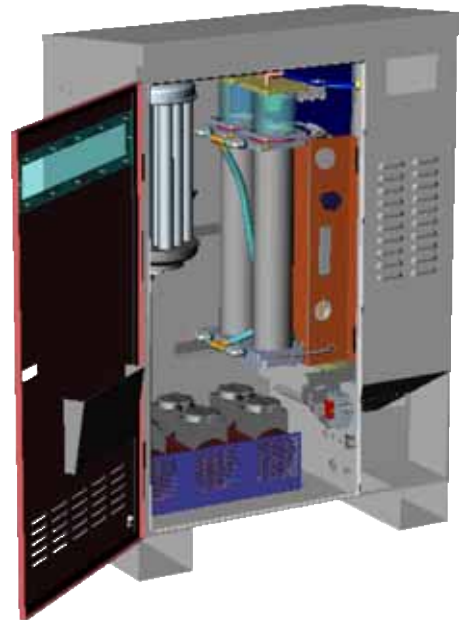
HOW IT WORKS



Ozone is produced in nature by the ultraviolet (UV) light from the sun and by lightning. Ozone is produced commercially in much the same way as in nature - through the electrical Corona Discharge (CD).

Generate → **Dissolve** → **React** → **Separate** → **Destroy**

- **Ozone Generator**
 - *Properly Sized*
 - *Vacuum Operation*
 - *Oxygen Feed*
 - *Controls and*



Ozone (O_3) is an unstable molecule generated by the exposure of oxygen (O_2) to a high energy electrical discharge (CD). The weak bond holding ozone's third oxygen atom is what causes the molecule to be unstable and thus such an effective oxidizer. Because of this instability an oxidation reaction occurs upon any collision between an ozone molecule and a molecule of an "oxidizable" substance



such as soil, organic molecules or microbes. In an oxidation reaction, energy transfers to the ozone molecule leaving a stable oxygen molecule (O_2) and a highly unstable oxygen molecule (O_1). The molecule being oxidized then bonds with the loose (O_1) atom creating an oxide of the substance. The structure of an organic molecule is changed by oxidation, which often causes the whole molecule to come apart (with some help from other ozone reactions). Bacteria and virus cells are literally split apart by ozone.

Ozone generation

Created from atmospheric oxygen (O_2)

- $O_2 + e = 2O_1$
- $O_1 + O_2 = O_3$

Ultraviolet (light energy, 185 nm)

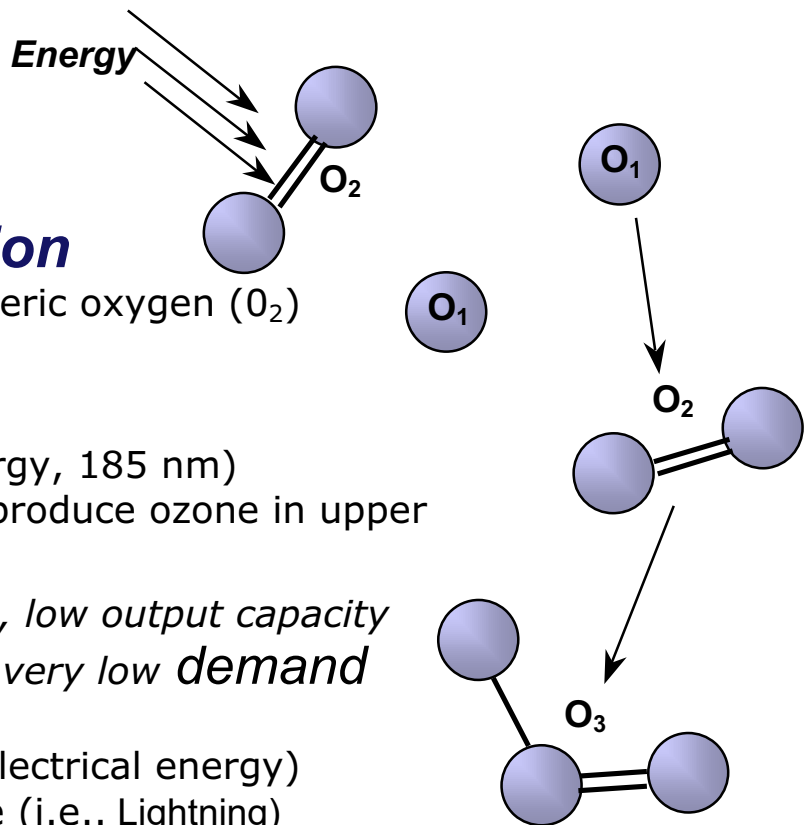
Sun's ultraviolet rays produce ozone in upper atmosphere

- *Simple, cheap, low output capacity*
- *Residential or very low demand systems only*

Corona Discharge (electrical energy)

High voltage discharge (i.e.. Lightning)

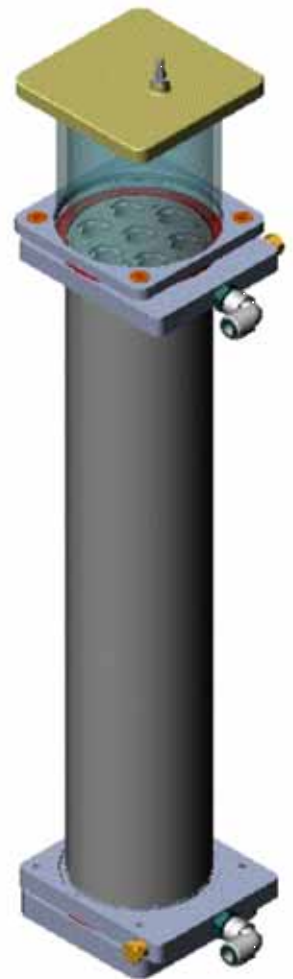
- *Relatively complex, high output concentrations*
- *Commercial and industrial applications*



Corona Discharge Ozone Technology

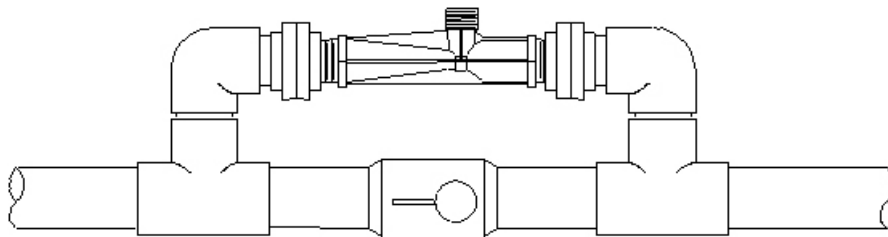
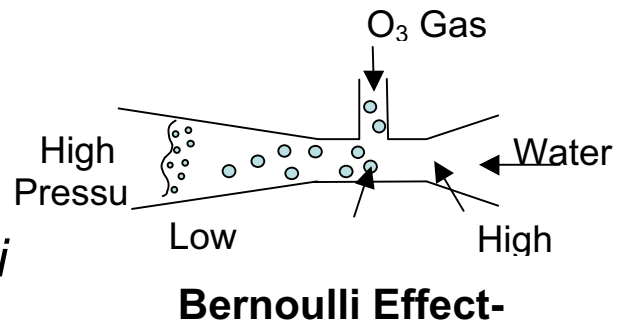
Now OzoneSolutions is revolutionizing ozone technology available to the laundry industry by using Corona Discharge technology for laundry ozone systems

- **Generator Cell**
 - *Water cooled tube in shell*
 - *316L Welded St. Steel*
 - *Cold cathode electrode design*
 - *Gas filled glass dielectrics*
 - *Self fusing*
 - *Elimination of hot spots*
- **H.V. Power Supply**
 - Variable voltage (up to 10 kV)
 - Power factor balance
 - Safety interlocks



Ozone System

- **Ozone Generator**
- **Injector**
 - Adjustable Venturi provides 95% + mass transfer
 - Unions, Check Valve, Ball Valve



After producing the ozone through our compact wall-mounted ozone CD generator we mass-transfer and dissolve the ozone gas into the water through a venturi injector the most efficient method of transferring ozone into water. The introduction of ozone into the water stream improves the quality of the water before entering the wash wheel, which substantially reduces the operating costs of the laundry as outlined by the benefits derived by utilizing a laundry ozone system by OzoneSolutions.



SYSTEM DESIGN & ENGINEERING



A successful ozone application in a laundry is dependent on efficient mass transfer of ozone into the water stream and proper reaction/contact time. A successful system treats incoming water with ozone levels high enough to be effective in cleaning linens while remaining safe for operators.

OzoneSolutions laundry ozone systems are designed to meet unique and custom requirements for laundry applications. OzoneSolutions engineers are experienced at designing specialized components to ensure optimum performance.

STANDARD FEATURES



- UL and NSF listed for safety and performance certification.
- Powder coated NEMA 3R compliant enclosures.
- On-board ORP controller for automatic shut-down and start-up.
- Protection from loss of vacuum, overheating of transformer, and water backflow.
- Variable output (0-100%)
- Oxygen prep feed gas system.
- Safety interlock on cabinet doors.
- All circuits are fused protected.

