Harco®

Leaders in Laundry Systems

CELEBRATING OVER 60 YEARS OF INNOVATION

ArtiClean

Ozone Laundry System

ArtiClean Ozone Laundry Systems

"Savings Never Smelled So Good"

What's Inside

Our Beliefs

In the history of the ozone laundry business, there have been many failed attempts to produce reliable ozone laundry systems. ArtiClean is the exception. ArtiClean is a division of a 40 year old laundry equipment business, with decades of experience in all sizes of laundries. We have the knowledge of what it takes to operate a laundry and how to make them operate efficiently. This experience is one major difference that we offer in the ozone laundry business. Many of the inefficiencies that we find can be applied to the bottom line of our customers, in that we evaluate the laundry operation in a manner that is rarely done by people with an outside view of the laundry industry.

ArtiClean has invested in technologies that will continue to make us the leader in ozone laundry. Our plans are to expand the distributor support system with online evaluations and learning cells, continue to invest into new technologies and manufacturing processes and most importantly, to build upon our success with our customers.

Our mission is simple, to continue to produce the best ozone laundry systems by being the most innovative, safest, creative, supportive, and being fully committed to a long term partnership with our distributors and our customers.

What Is Ozone

Ozone - Nature's Sanitizer

Ozone, commonly referred to as "Natures' Sanitizer," is an unstable molecule that naturally purifies the atmosphere.

Ozone is produced when a high energy source, such as lightning, splits a normal oxygen (O2) molecule, and they are then reformed as three parts of oxygen (Tri-Atomic Oxygen) or O3.

The bond between the normal molecule of oxygen (O2) and this additional molecule of oxygen is weak and unstable, allowing for this molecule to virtually attack and neutralize almost anything organic that it comes in contact with. It is this instability that makes Ozone such a strong oxidizer and sanitizer.

Ozone is the strongest-reproducible sanitizer known to man. It is used in many industries that affect us daily.

Ozone is much more than just a sanitizer. It is used almost exclusively by the bottled water industry. Ozone in solution destroys algae and bacteria to be able to purify drinking water without the strong chlorine after taste.

Ozone is used to kill bacteria and fungus on produce. The after effects of ozone will give fruits and vegetables a longer shelf life.

Ozone is used everyday in hotels to remove odors from hotel rooms. Smoking rooms can be odor free in just a few short hours.

Ozone is used in the Food Processing industry to kill bacteria such as e-Coli.

It has been proven in numerous tests that in high enough concentrations, ozone is very effective in killing bacteria and viruses such as: HIV and Hepatitis, plus the new Superbugs: C.Diff, Aspergillus niger, and MRSA.

What is Ozone Laundry

White, Soft, and Clean Smelling - Ozone laundry has many attributes that make it so attractive to laundries. Apart form the sanitizing properties, Ozone also helps to soften the linen, it aids in whitening linen, plus it gives that "Clothesline Fresh" smell to your linen.

Hot Water and Natural Gas Reduction - In order to activate laundry chemistry in the shortest time possible, for non-residential use, traditional washing calls for the water in the detergent and bleach steps to be heated from 135 degrees F to 160 degrees F. Depending on the application, flushes and rinses are usually warm or cold. By ozonating water (i.e. saturating the water with microscopic ozone bubbles), the cold ozonated water provides the energy that usually comes from hot water to activate your laundry chemistry. As much as 95% of the hot water consumed can be eliminated, which in turn drastically reduces the amount of Natural Gas used to heat the water.

Reduced Drying Times - In many cases we are able to reduce drying times, but these savings can be tough to quantify so we don't typically include them in our payback analysis. Nonetheless, a 10 to 30% reduction in drying times for many customers is a very welcomed additional savings.

Improved Linen Quality - If your laundry is operating under optimum conditions, (plenty of hot water, properly calibrated and applied laundry chemistry, no water issues, and proper laundry handling and processing), ozone will probably not improve your whiteness or reduce your rate of rewash. In reality, most laundries we see are struggling with one or more of these issues. In those cases we often hear reports of increased whiteness, and even reduced rewash. We have a large nursing home that says the only complaint from the ozone is that they no longer have enough rags for the kitchen! We had another hotel customer that said they ran out of shelf space because the towels were much fluffier.

Linen Replacement - Hot water, chlorine bleach and PH are what wear out your linen during the wash cycle. By washing in cold ozonated water, you can dramatically increase your linen life. We worked with a customer that had to have their effluent (drain waste water) monitored for PH levels. Maintenance on the monitoring tank required cleaning of a lint filter once or twice daily. After ozone, that cleaning was reduced to once or twice weekly. For the non-laundry initiated, lint is basically your linen going down the drain! We have a commercial laundry doing hospitality work that reduced their linen replacement from $150,000 to $75,000 annually. Some customers have opted to reinvest the linen savings into higher quality linen, allowing them to enhance their guest experience without additional cost.

Increased Production - Because ozone is much more reactive than chlorine, especially in combination with reducing a rinse or more, wash cycle times can be reduced by 10 to 30%. For a small hotel, this probably doesn't count for much, but for a larger hotel or any health care facility, this can mean the difference between overtime and having your laundry done in one shift. Some accounts have been able to reassign or cut back laundry personnel. Many savvy prospects interject at this point that reduced washing time won't help because "I can't keep up with the dryers." Remember per the energy savings discussion above, that drying times can be reduced 10 – 30% as well. Reduced cycle times can result in lower costs, alleviating the need to add additional washing capacity, quicker linen turns in the morning, increased revenue, or a combination thereof.

Ozone and the Enviroment

It seems that everyday we hear about the Ozone Pollution or Air Quality Safety alerts on the radio or television. Do our ozone systems increase the air pollution that we all hear about?
The answer is No! Scientists will tell you that there are two completely different types of ozone.

The "Good" Ozone or the type that we deal with is created in the Stratosphere (upper layers of the atmosphere) by lightning splitting the oxygen atoms and forming ozone in the form that is known as the oxidizer and sanitizer that purifies the atmosphere. The Stratosphere is also where the "Ozone Layer" is contained. It is the Ozone Layer that protects us from the harmful ultraviolet light from the sun.

"Bad" Ozone is formed in the Troposphere, or the lower layers of the atmosphere, when Ultraviolet light from the sun reacts with the Volatile Organic Compounds (VOC's) and Nitrogen Oxide gasses (NOx) that are produced from burning gasoline in automobile engines. This "Smog" reacts with oxygen in the air due to excessive ultraviolet light from the sun to form a dirty form of ozone, otherwise know as "Air Pollution."

How is Ozone made for Commercial Use?

Ozone is the strongest commercially reproducible sanitizer known to man. It is man-made just the way that nature makes it. Commercial Ozone gets its start from an industrial grade oxygen concentrator. The air that we breathe is made up of approximately 75% nitrogen, 21% oxygen, and 4% hydrogen and other inert gasses. The oxygen concentrator removes the nitrogen from the air, thus producing approximately 93-95% pure oxygen. This is achieved by compressing air into a cylinder that is filled with a molecular sieve powder that absorbs nitrogen, thus allowing the almost pure oxygen to pass out of the chamber. The nitrogen is then purged back into the atmosphere.

This manufactured oxygen is then piped into an ozone generator that creates a mini lightning storm where the oxygen is passed thru and ozone is instantly created, just as it is made in nature.

There are two types of ozone generators. The most common is the Corona Discharge type where two close tolerance surfaces are charged with electricity (one positive and one negative). These surfaces create a high voltage arc of electricity (lightning) between them. As oxygen flows thru this arc, 1 to 10% of the oxygen is made into ozone. Another type of generation of ozone is achieved by ultraviolet light (UV) reacting with oxygen, to form ozone. These UV generators typically produce much lower concentrations of ozone.

Safety - Is Ozone Safe

Yes - if the ozone system is properly designed and installed. At ArtiClean, we take the laundry workers-safety on a personal level. Outlined in this brochure, you will learn about all of the safety components that are incorporated on all ArtiClean Ozone Laundry Systems. Some of these safeties include the industry exclusive Ozone De-Gassing Chamber, the oversized Ozone Destructs, the ORP Measuring Controller, and the Stainless Steel vacuum switches installed in every ozone generator. These items do not have to be present for an ozone laundry system to work, but when it comes to working safely, we insist that every machine that we put our name on has all of these safety devices.

Virtually all of the chemicals used in your laundry are potentially dangerous and ozone should be given similar respect. Ozone is a very aggressive oxidant that if allowed to permeate into your laundry room can cause headaches and /or nausea which can last 24-48 hours. Ozone has a distinctive odor and too much ozone in the laundry is readily noticeable. When properly applied, ozone will have a sweet freshening smell on the linen, which is all but gone after the drying process. Constantly watery eyes, headaches and / or nausea (especially in the presence of two or more laundry workers) could indicate that the ozone levels are too high. Extreme ozone levels are readily noticeable and are similar to a strong whiff of chlorine that is immediately evident in the sinuses. Responsible ozone companies design their systems to assure that the possible ozone levels indoors will be within OSHA standards.

Please keep in mind that ozone gas in high enough concentrations can be hazardous. One percent of undissolved ozone gas released into a room can easily exceed the maximum exposure levels as set forth by OSHA.

ArtiClean offers the option of a room monitoring device factory installed on your ozone system. These controls come in a variety of styles. Our entry level monitoring system can be built into the ozone generator and it has three colored LED lights to let the operators know the levels of ozone in the room. The system can also control the ozone generator output and sound an alarm should the levels become too high. Our other room monitoring systems work in the same manner, with a numeric display instead of the LED display. These optional systems all have field replaceable sensors and are available on all models of ArtiClean Ozone Laundry Systems.

Why ArtiClean

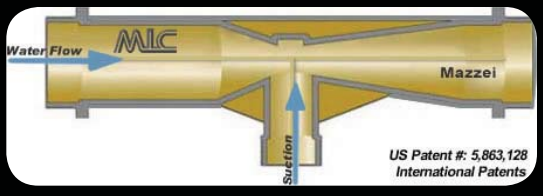
Why ArtiClean? ...Bubble Diffusion vs Venturi Injection

When you blow air through a straw into a glass of water, what happens? The air bubbles instantly rise to the top. This is what happens when ozone is bubbled into water. There are two basic ways of injecting ozone gas into water. The first way of injecting ozone into water is commonly known as the "Bubble Diffusion" way. The other method of dissolving ozone is via Venturi Injection.

Bubble Diffusion is used primarily in the bottled water industry. During this process, ozone is "bubbled" into the bottom of a large tank or column of water. An air stone, similar to what you find in a fish tank, is used. As was mentioned before, when you blow air or most any type of gas into water, it will rise to the top very rapidly. Mounted at the top of these 12-14 foot tall bottled water tanks is a relief valve that will strip off any un-dissolved ozone. Also during this process, water is entering these tanks at the top and is traveling downward to an exit point at the bottom of the tank. The flow of ozone rising to the top of these tanks is very turbulent, due to the "counter-flow" of water. During this process, approximately 50-60% of the ozone gas is dissolved, due impart to the counter flow of water creating the turbulence. The undissolved gas is removed at the top of the tank via the air-relief valves and destroyed (turned back into oxygen). This is the cheap and easy way to inject ozone.

A Venturi Injector is a device that water flows thru. As the water passes through the venturi, the speed or flow of the water is slowed down, then increased very rapidly. At the point where the speed of the water is increased, a large amount of suction or vacuum is created. When ozone gas is applied to this suction, the majority of the ozone gas is dissolved into the water instantly.

The ability to dissolve large amounts of ozone into water is what we call "Mass Transfer". It is generally thought that the higher the amount of mass transfer that is achieved, the more efficient your ozone system. A venturi injector style system will typically achieve 75-85% mass transfer versus 50% mass transfer from a bubble diffusion system. Therefore, it is generally accepted throughout the ozone industry that venturi injection, although usually more expensive to install, is the best way to inject ozone into water.



We have always pointed out to our customers that ozone can be hazardous, especially if the application is not properly designed to deal with any and all ozone that is not properly dissolved.

As a potential owner of an ozone laundry system, you owe it to yourself, your employees, and your customers to investigate how your potential system is designed, and even more importantly to ask "How is undissolved ozone controlled and disposed of?"

One percent of undissolved ozone escaping into your laundry can expose your laundry workers to as much as 30 times the maximum exposure limit that OSHA has determined to be a safe-acceptable level. When 50% or more of a bubble diffusion system and 10-20% from a venturi injection system is undissolved ozone, it is critical that we know where this gas is going.

Unless your ozone laundry system has a device to remove and destroy any undissolved ozone, the gas will enter the washer in its most destructive form, and this gas will eventually enter the wash room as well. Dissolved ozone in water has never been documented to have caused any damage to a washer/extractor. Undissolved ozone is another story.

Dissolved vs. Bubble

Dissolved Ozone: The ArtiClean Way

ArtiClean systems are designed around dissolving the ozone in the cold water supply headed to the washer and then injecting the washer with a stream of cold, ozonated water. ArtiClean chooses this method because:

• On all ArtiClean models, the operator can readily identify the oxidation levels of the ozonated water going into the washer, i.e. Our customers can easily and immediately confirm that the system is working properly.

• By pre-dissolving the ozone, we can maximize the amount of ozone applied during the wash cycle.

• Pre-dissolving minimizes off-gas concerns.

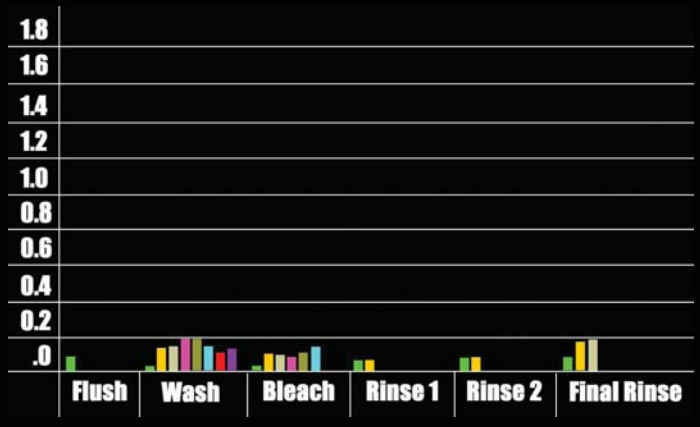
• Pre-dissolving allows kill rates up to 3 times that of 'bubble' systems.

• Pre-dissolving is the only ozone laundry technology approved for health care in certain states.

• Certain washing machine manufacturers void their warranty if 'bubble' systems are used.

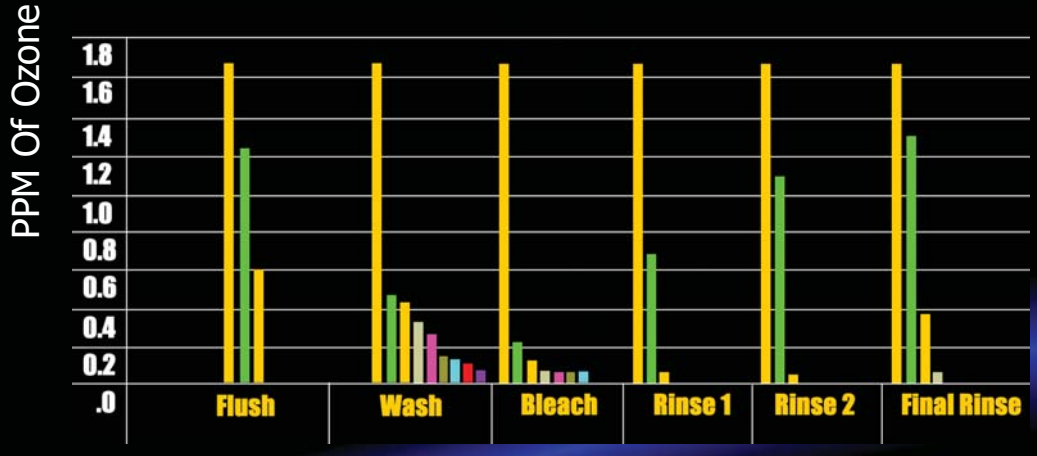
Bubble Method

Measured Reading of Disssolved Ozone
in One Minute Increments of a Typical Wash Cycle



ArtiClean Dissolved Method

Measured Reading of Disssolved Ozone
in One Minute Increments of a Typical Wash Cycle



• Pre-dissolving allows systems to work as effectively in bigger washers where 'bubble' systems have struggled to maintain long-term satisfactory results.

• Pre-dissolved systems apply micro-bubbles which increases surface area contact with the linen.

• Pre-dissolving systems start cleaning from the moment of the initial fill and brings its cleaning action deep into the fibers as the ozonated water is absorbed into the linen from the first fill.

• Pre-dissolving systems allow for the removal of undissolved ozone that can be destroyed.

The Charts above compare the actual performance of an ArtiClean Ozone Laundry System to that of a Bubble Diffusion System. Notice that the "Bubble" guys never reach the same levels of ozone as the ArtiClean System, and the discharge rate of ozonated water is higher with the Bubble type systems, causing an additional off-gas issue in the laundry room.

Bubble Diffusion: The Other Way

The following is a list of disadvantages of the bubble design as outlined by the owner of the leading provider of bubble ozone laundry systems:

• Bubble systems are 'low efficiency, and the concentration of dissolved ozone in the water is consequently low thereby resulting in only a small enhancement in the cleaning and the antibacterial effect of the ozone.'

• Bubble systems also have 'the disadvantage that the amount of off-gas, i.e. The ozone given off to the surrounding environment during the operation of the washing machine can be considerable. The ozone gas will typically collect in the area surrounding the washing machine and can cause health and safety problems in the event that any person located adjacent to the washing machine is exposed to a high concentration of ozone.'

• Another problem with Bubble systems is 'there is no mechanism for controlling the amount generated during the wash cycle. As a result of this, a dangerous level of ozone can be generated during operation of the washing machine, especially at a laundry mat or a commercial laundry facility, thereby creating a situation which is hazardous to human beings.'

One particular bubble ozone system manufacturer tries to address the above bubble related concerns by monitoring the ozone off-gas from the washer. The disadvantages of relying on monitoring the off-gas are:

• The level of off-gas is a function of the solubility of the water which changes dramatically from season to season based on water temperature and PH. Therefore, applied levels of ozone with a bubble system controlled by a monitor will vary greatly.

• Ozone gas monitors vary in accuracy and reliability and need to be recalibrated regularly. If the monitor is not properly maintained, the customer will be exposed to all the bubble related risks enumerated above.

In time, the monitor will eventually fail or need replacement. Without additional controls in place, like our OLSC, at such time the laundry workers can be exposed to all the bubble related risks enumerated above.

The test above shows the minimum standards as set forth by the Center for Disease Control (CDC) for killing the toughest bacteria. The red line is the "CT" value or the levels of ozone where bacteria is killed. It is easy to see that ArtiClean kills the bacteria in each and every bath. The others do not come close.

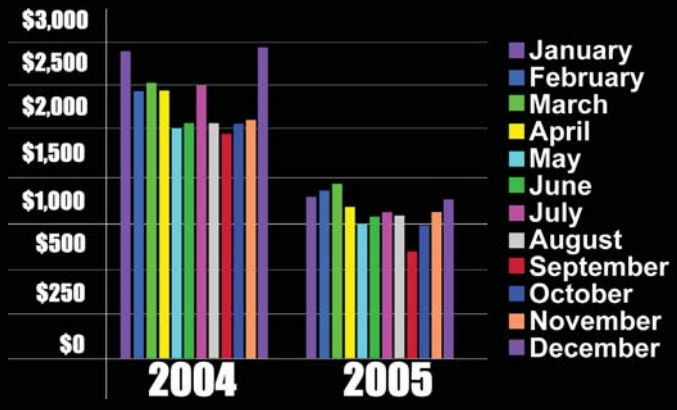
Bacteria Kill Rates - Several ozone laundry manufacturers talk about ozone's ability to kill bacteria, but in most cases, as is the case with the "Bubble Diffusion Systems" the bacteria that is killed is due to it coming in contact with the raw undissolved ozone gas inside the wash wheel. Only ArtiClean has the strength to kill all forms of bacteria by using the dissolved ozone in the water alone.

ArtiClean Advantages

Major Reduction in Natural Gas Cost

Approximately half the natural gas consumed in the laundry is for heating water. The other half is used in drying the linen. ArtiClean can eliminate 90% or more of your hot water usage.

Some facilities have turned their hot water heaters off! An average 100 bed nursing home could save a minimum of $1,200 per month on their Natural Gas bills.



Faster Fill Rates

ArtiClean Ozone Laundry Systems utilize an extra large ozone-resistant water valve to fill your washers. These valves work separately from your existing fill valves, and in most cases will fill your washers in half the normal fill time. This saves you time, which in turn Saves You Money!

Shorter Wash Cycles

Under normal laundry conditions, the "cleaning window" of a wash cycle is only during the detergent and bleach steps. This cleaning window is usually 1/3 of the total wash cycle time. With ArtiClean, the entire wash cycle is the cleaning window… When your washer fills with water, in most cases, it is cold-ozonated water. This means that every time your washer fills (most wash cycles fill at least 5 times), it is getting a fresh dose of ozonated water. This in effect makes the "cleaning window" the entire cycle. By lengthening the cleaning window, we are able to shorten the entire cycle by as much as 20%.

"What does this do for me?"

20% faster wash cycles mean the possibility of running your laundry 20% fewer hours per day…week…year!!!

Shorter Drying Times

Ozone actually penetrates the fibers of your linen. This is evident in the thicker, fluffier towels that are dried after being ozonated. The ozone helps to release moisture in the dryers or on a flatwork ironer, thus creating much faster drying times as well. In most cases, drying time has decreased by 20%. This decrease in drying times also reduces gas consumption in the dryers by up to 20%.

Vacuum vs. Pressurized Delivery

For ArtiClean, our ozone gas is delivered to the injection point under vacuum via the venturi. The "Bubble" guys have to pump their ozone to the injection point under pressure. It is important to understand that a leak in ozone tubing on our system will suck room air into the venturi, causing the ozone levels to be lowered, however a leak in a pressurized line on a bubble system will let ozone gas leak into the workplace.

The AW Series

The ArtiClean AW Series is the world's first self-contained wall-mounted ozone laundry system. It requires no floor space for installation. The AW Series offers instantaneous-continuous flow of fully ozonated water that has been stripped of any potentially harmful off-gas. The system operates completely on a vacuum generated from the Venturi. This means the system stands by in an "idle" mode until the washers call for water. The AW Series ranges in capacity from our smallest unit that will handle a single 35 to 60 lb machine, up to a total of 600 lbs combined washing machine capacity. Flow rates, depending upon models, of fully ozonated water are from 10 to 55 gallons per minute.

The AW Series comes standard with our Ozone DeGassing Chamber, our OLSC Controls, an industrial grade oxygen concentrator, and a Plasmatics ozone generator. The unit comes pre-built and ready to hang on the wall.

The AT Series

For our larger customers, we offer our industrial grade ozone laundry systems. These systems are running some of the largest institutional laundries in the world. They start with high grade industrial oxygen concentrators, field proven ozone generators, stainless steel recirculating pumps, and an ozone resistant storage tank. All of our systems come standard with our ozone DeGassing Chamber, our OLSC controls, and heated Ozone Destruct system. Standard piping assemblies are all a part of shortening the installation time-frame.

Some of the leading ozone engineers in the world were consulted in the development of our ozone laundry systems. Their main objective was to design and build the most reliable ozone laundry system in the world. These systems contain the best components available to help ensure extended reliability and consistent results for many years to come. We will spare no expense to ensure that all the safety features needed to fully protect your workers are an integral part of our systems.

In addition to venturi injection, all of our systems come standard with our exclusive Undissolved Ozone Gas Removal System or a Degassing Chamber. It would be much more economical to build systems without them, but that would jeopardize our integrity and subject your personnel to potential hazards. Any ozone gas that is not dissolved into the water is removed from the water stream and destroyed.

The Controls

At ArtiClean, it is our belief that every ozone laundry system should be equipped with a monitor or control system to ensure consistent results, proper bacteria kill, and protect the safety of the workers.

You would never install a furnace without a thermostat. Then why would you install a machine that produces a gas that can be toxic, and not have a control system on that machine? Sadly, most ozone laundry systems do not have any type of controls or safeties. Without expensive testing equipment, there is no way to know if your ozone system is properly operating.

Every ArtiClean Ozone Laundry System comes standard with our Ozone Laundry Smart Controls or OLSC. This patent-pending control and software allows your laundry operators to know at all times that your system is running correctly.

Under normal operating conditions, the OLSC continually monitors the output of the ozone laundry system. If all conditions are good, then the controller will tell the operators the ozone laundry system is performing correctly, by illuminating a Green-OK light. However, should your ozone levels drop below the minimum levels needed to properly disinfect bacteria and clean your linen, the OLSC controller will turn off the Green-OK light and illuminate a Red-Service light. As an added safety, the controller will also illuminate a Red-Service light should the ozone levels get too high.

The OLSC controller also has a output (4-20mA) that is easily measured and can be recorded for long term proof of the proper operation of your system. Our software along with optional data logger allows for measured data to be graphed, printed and exported to other applications for positive verification of the operation of our system.

PLASMATICS
OZONE GENERATORS

Most ozone generating equipment lacks the engineering to make an exceptional and reliable product.

By being the largest supplier of ozone systems to commercial laundries, ArtiClean has been approached by all the major manufacturers of ozone generators. Although some were much better than others, nobody made an ozone generator that was specifically designed for our application. For years, we used off the shelf ozone generators that were modified for our needs.

Due to our success in the ozone laundry industry, ArtiClean was chosen to be the supplier of "Ozone Paks" for the new WashDog process for laundries. The main challenge was to have an ozone generator that could withstand the rigorous use that would be needed for this process, but at the same time, this generator would need to be silent. We could not find one, so we hired one of the top ozone engineers in the country, and designed our own!

This was the formation of a new breed of ozone generators named Plasmatics.

Plasmatics generators are a combination of the old reliable Corona Discharge technology, plus the addition of the new Plasma generator technology, which give us a much larger power band to generate our ozone. It enables us to create higher concentrations of ozone (up to 8% by weight). The Plasmatics generators also are controlled by a power inverter, which will accept 85 to 130 volts of AC power, giving us the largest accepted power range available.

Plasmatics generators are also linear tuned which means we can control our output of power from 1-100 % in 1% increments. These generators are also equipped to operate on a 4-20 mA signals

Along with the Plasmatics ozone generators, comes our family of ozone destruct units. These units are designed for years of continued use, but unlike most ozone destructs, these are easily field rebuildable.

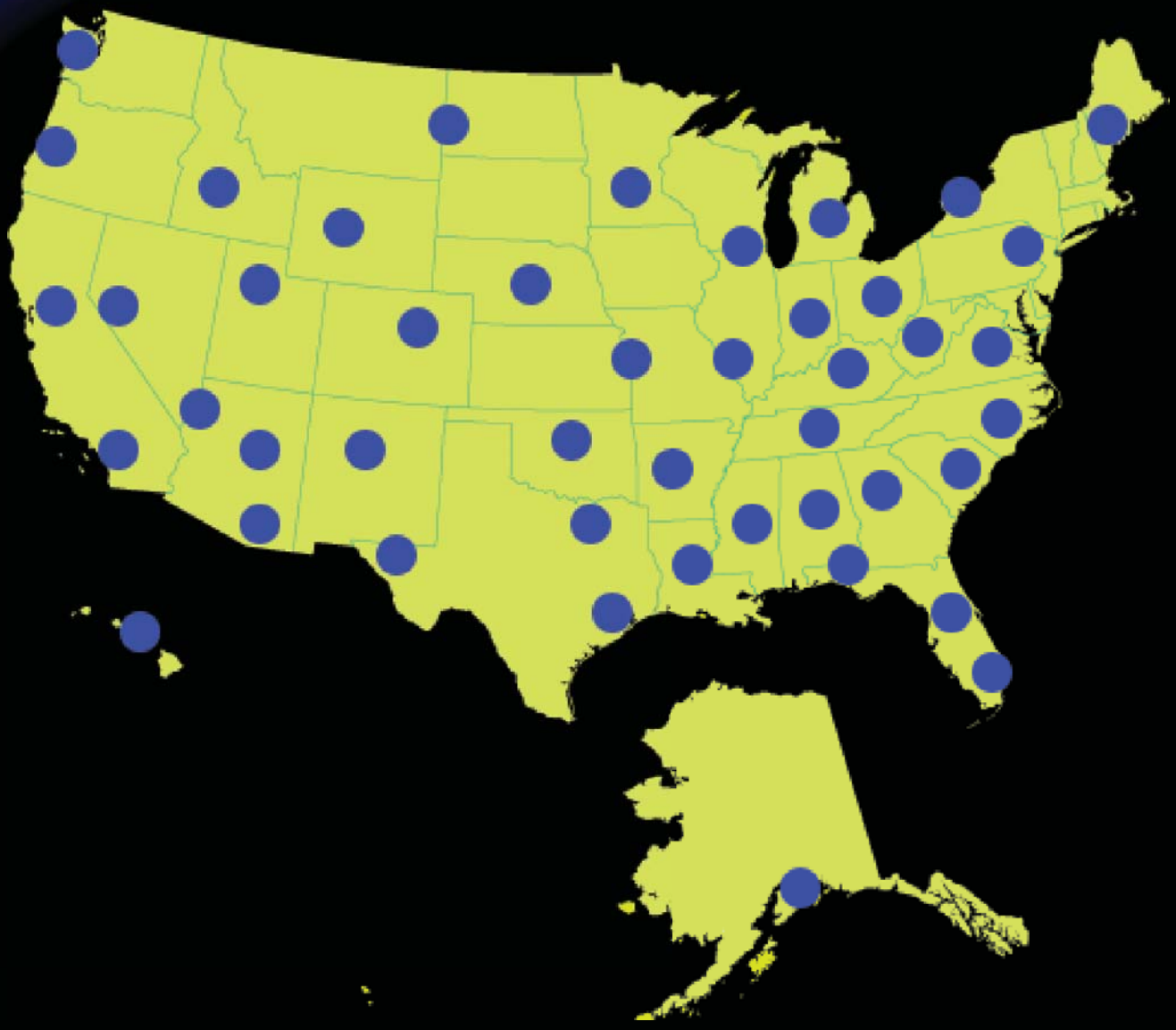
The units come in three basic sizes:

Model D112 is our standard ozone destruct. It is the normal destruct used on our AW Series of ozone laundry system.

Model D312 is the workhorse used in our AT Series of large tank systems.

Our Model D324 is a specialty ozone destruct used for high volume in our larger WashDog projects.

Nationwide Distribution



Did you Know? Over half of the Ozone Laundry Systems ever installed by various ozone suppliers are no longer in operation, which ultimately means the equipment did not deliver on its promise, or the equipment failed and no one was available to repair it. In either case, a significant capital investment was lost.

Problems will arise. More often than not, they are unrelated to the ozone system, but since ozone is the newer technology, it gets the blame. Look for support that is either regional or local, and that is well versed not only in general laundry expertise, but also ozone laundry.

ArtiClean Ozone Laundry Systems will be there for you years after the sale. Most failures of Ozone Laundry Systems are due in part to a lack of service after the sale. Our nationwide distributor network ensures that your system will be serviced by one of our Factory Authorized Service Technicians. The majority of our representatives are the regions largest commercial laundry distributors; therefore you probably already know the quality of their support.

Final Recap On Ozone

Purchasing an Ozone Laundry System is a large investment for your facility. To ensure years of quality operation, the following items should be a part of your Ozone Laundry System.

• **Oxygen Concentrator:** The oxygen is the start of a good Ozone Laundry System. Make sure that your system uses an Industrial Grade Oxygen Concentrator. As a way to cut costs, some systems utilize an "Air Dryer" as a substitute for the oxygen concentrator. Dry Air or lower concentrations of oxygen will create a by-product when the Ozone is generated. The product created is Nitric Acid. This acid will gum up your generator and all your transfer lines, plus eventually damage your ozone generator.

• **Industrial Ozone Generator:** The Ozone Generator is the meat of any ozone system. Many laundries operate 24 hours a day. Make sure that your generator is built to withstand those hours. Another major point is to make sure that the reactor cell or ozone creation chamber is not made of glass. Glass used as a di-electric will crack and break under harsh conditions, especially if the possibility of water entering the chamber exists. Remember that all ozone generators are not alike. Generators are rated in output by Grams/Hour, plus they are also rated by the percentage of ozone that they make. The most common range is 1.5 to 7%. Our 15+ years of experience in the field have taught us that in order to have requisite levels of dissolved ozone in the water you need at least 3% concentration from your ozone generator.

• **Controls:** Every Ozone system should have a suitable control that monitors the system. You would never install a furnace without a thermostat, then why would you install a machine that produces a gas that can be toxic, and not have a control system on that machine.

• **Degassing Chamber:** The best ozone laundry systems on market can only dissolve about 80% of the ozone into the water, while some systems dissolve as little as 25%. In any event, your Ozone Laundry System should contain a De-Gassing Chamber that can strip off any undissolved ozone and then destroy it by using a specially designed Ozone Destruct Unit. This unit should also be heated to eliminate the possibility of condensation building up in the Ozone Destruct.

• **Bubble vs. Venturi Injection:** All systems are not created equal. Only a properly designed Venturi Injection system with a Degassing Assembly will ensure that your laundry will not be flooded with Off-Gas leaking out of the washer.

• **Ozone Resistant Water Valves:** Ozonated water that fills up a washing machine must be piped through specially designed ozone resistant water valves. Normal fill valves on a washer will not last when in contact with ozone.

• **Local Representation:** Although your representative may not be in your hometown, make sure that the company that you are working with has the ability to service your account after the sale. Ozone Laundry Systems are not that complicated, however, high voltage is used to create the ozone and only a qualified technician should work on your system.

• **Stainless Steel and Viton Pumps:** On larger systems, it is imperative that an industrial grade recirculation pump be used. This pump should be made out of stainless steel with Viton seals to ensure long life.

Finally remember, Ozone is the strongest reproducible sanitizer known to man. If properly designed, installed, supported, and maintained, a good Ozone Laundry System will give you many years of clean, sanitized and fresh smelling linen. We at ArtiClean are confident that once you compare our systems to the competition, you will agree, that there really is NO COMPARISON!!!

Harco®

Leaders in Laundry Systems

CELEBRATING OVER 60 YEARS OF INNOVATION

ArtiClean

Ozone Laundry System

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