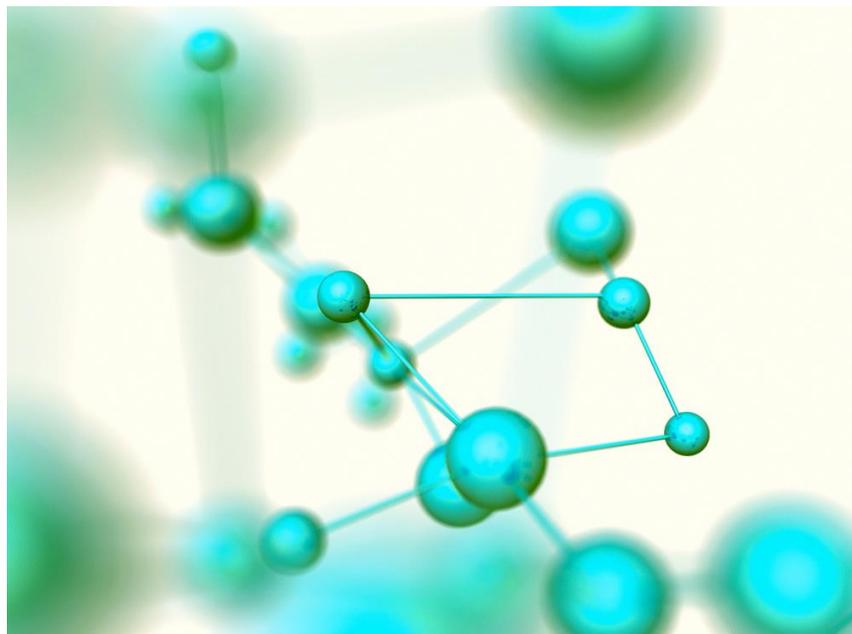




**iZONE<sub>o3</sub>**

# Guide To Ozone Laundry Systems



## Benefits Of Ozone Laundry Systems:

Laundry operations that incorporate ozone technology operate with significant economic and environmental advantages when compared to conventional laundry systems including:

- Total infection control inc. MRSA & Clostridium Difficile 'CDIFF'
- Reduction in water heating
- Reduction in drying time
- Reduction in water consumption
- Reduction in waste water volume
- Reduction in laundry chemicals due to enhanced efficiency
- Improved cleanliness, sanitation and disinfection of linen
- Increased durability and extended life of the laundered items
- Reduction carbon footprint due to eco friendly green laundry
- Less extensive treatment for waste water

## Additional Advantages Include:

- Increased productivity due to shorter wash cycles + less drying
- Improved working conditions - lower water temperatures and decreased drying times will contribute to improved comfort in the workplace
- Improved cleanliness and attractiveness of linens & towels many first hand accounts from current ozone laundries attest to a noticeable improvement in the cleanliness and fluffiness of the towels
- Increased linen life - according to published reports, ozone laundries see a tangible increase in linen life
- We do our part in preserving our precious, natural resources by reducing our carbon footprint



## Some Facts About Ozone & Its Application Within The Laundry

Ozone ( $O_3$ ) is an unstable, triatomic form of ordinary Oxygen ( $O_2$ ). It is formed naturally when oxygen is exposed to ultraviolet light, as in the upper atmosphere or when subjected to high voltages such as lightning strikes. Ozone begins to degrade as soon as it is formed, either through reactions with other chemicals or by decomposition to molecular oxygen. Storage of ozone is impractical due to its rapid decay, therefore it must be generated on site at the time of use. Ozone is a colourless gas with a distinctive odour and is one of the many naturally occurring gases making up the air we breathe.

Ozone is one of the most powerful oxidants available and is generated via the same mechanisms employed by nature: Ultraviolet Light and powerful electrical fields. It is currently used in applications as diverse as disinfection of drinking water, maintenance of water quality in the aquaria and whale pools at sea parks, deodourization of smoke damaged property, disinfection of hot tubs and swimming pools, and colour / odour removal from wastewater streams.

As a powerful oxidant, ozone will react with many of the proteins, fats, oils, tannins and serum constituents that compose soils on textiles. Ozone oxidation cleaves many large molecules leaving smaller oxidized residuals with improved solubility characteristics which allow their removal with significantly less chemicals. Ozone functions similarly to colour safe oxygen based bleaches, removing stains and destroying microbes while leaving fabrics undamaged and colours bright.

Ozone cleans fabrics by chemically reacting with insoluble soils through oxidation, causing them to break into smaller molecules which are water soluble and can be freed from the fabric by ordinary washing machine agitation. Other beneficial processes are also at work, such as how ozone acts on the properties of water, which makes the use of ozone with certain detergents containing alkalis and surfactants significantly more effective. Because of these cleaning enhancing properties ozone can effectively be used in laundry operations to enhance the use of chemical detergents. Since ozone also has significant sterilization properties, it makes an ideal laundry problem solver.

Ozone leaves no chemical residue and as the amount of detergent needed in conjunction with ozone laundry systems is much lower the cycles require much less rinsing resulting in saving water consumption and waste water.

Ozone works so efficiently in cold water this removes the need for heating the water resulting in energy saving and recovered labour time or increased throughput.

Ozone improves the removal of soils from wash water, it helps prevent redeposit of soil onto the wash (one of the major causes of fabric greying) which in turn reduces the need for harsh damaging bleaching.

Ozone enhances the effectiveness of the actions of chemicals, reducing the need for high temperature washing.

Ozone wash systems require fewer rinse steps, thus reducing water usage by an estimated 30-45%.

Ozone makes existing chemicals work better, and reduces overall chemical demand in several ways:

- Ozone supplies oxygen to the wash water increasing chemical effectiveness and reducing chemical level required.
- Ozone oxidizes linen soils, making them easier to remove from the wash water.
- Ozone reduces the need for harsh, high-pH chemicals traditionally used to remove Fats, Oils and Grease (FOG) by breaking some of the molecular bonds in FOG and reducing them to simpler carbon compounds.

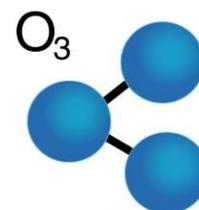
Whilst ozone laundry systems will use some chemicals, savings claims range from 25% to 70%. Actual savings depend on the type of laundry being washed, the temperature and hardness of supply water and the design of the system.

Ozone in water solution performs the function of chlorine bleach, without producing by-products.

Ozone is hypo-allergenic.

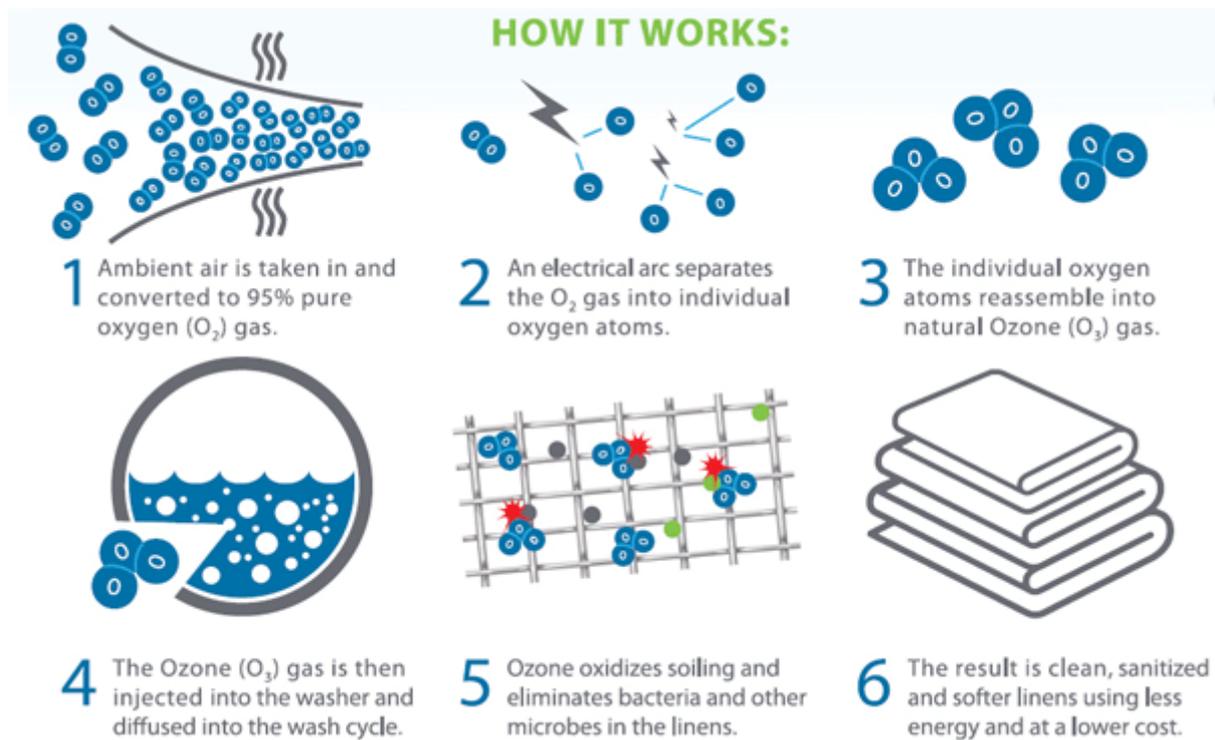
Ozone kill rate compared to Chlorine:

Microbe	Ozone kill rate compared with chlorine
Enterobacteria	25 x higher
Viruses	5 x higher
Bacterial spores	40 x higher
Amoebic cysts	10 x higher



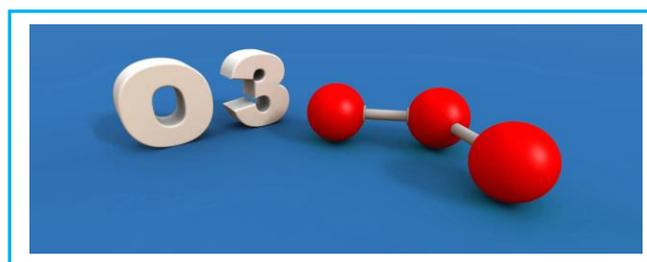
## How Does It Work:

- The Ozone Laundry System starts by converting air to 90% oxygen.
- An electrical charge splits the oxygen molecules ( $O_2$ ) to form ozone ( $O_3$ ).
- A defuser delivers continuous ozone into the wash, which disinfects and destroys bacteria, yeast, mould and viruses inc. MRSA & CDIFF
- Fibres in the linen become opened, cleaning is enhanced and drying is quicker. The result is clean, fresh, completely disinfected laundry.



## Ozone Washing With Air Injection:

Ozone gas is injected directly into the basin of the washer. A properly designed air injection system will activate traditional laundry detergents, allowing them to do their job with less water and at lower temperature. In this approach ozone is relied on for disinfection and overall laundry quality with reduced costs. Disinfection is achieved with the ozone gas in solution as well as linen folding into the ambient ozone in the wash drum.



**Fluffier Fresher Towels!**

Ozone Laundry System works effectively with cold water, which significantly reduces electrical consumption per machine. Shorter wash cycles mean less water is used, speeding up drying times and increasing the life of the linen. The finished laundry is also brighter and fluffier.

## **Single Towel Comparison**

### **A Dramatic Difference**



Conventional  
Washing

Washed with  
**iZONE<sub>o3</sub>**



**Total Infection Control With Ozone Laundry Systems:**

○zone is one of the most powerful disinfectants known to man and proven effective against all micro-organisms, bacteria, yeasts, moulds and viruses - including super bugs such as MRSA and C Diff - on all wash cycles.

*"Evidence shows that Ozone Laundry Systems are more effective in decontamination than current laundry systems."* Department of Health Ozone Laundry Systems have received recognition by the Department of Health's Rapid Review Panel and is used in hospitals, care homes, schools, vets, hospices, hotels, spas and sports clubs across the UK.

*"Ozone washing systems have become popular in healthcare applications in the UK in recent years because they provide verified disinfection,"* says Richard Neale, director of the Laundry Technology Centre (LTC). *"Today with energy prices so high, every laundry should be looking at the energy and money savings that can be achieved using ozone washing systems."*

○zone has been used as a key element in disinfection and purification for many years across many industries, including the treatment of bottled and mains water and in food manufacture.

○zone Laundry Systems have taken this technology and adapted and refined it to create an intelligent laundry system that ensures complete disinfection on every wash. The system automatically adds ozone into all wash programmes, removing operator error (either accidental or deliberate), providing disinfection whilst reducing cycle time, energy, chemical and water consumption.

○zone Laundry Systems are also available with a validation unit that monitors the ozone and provides an audit trail to confirm disinfection.

○zone Laundry System washing system offers savings of between 30-50% in electricity consumption, 40-60% in hot water and 10-30% in detergent. An ozone-equipped laundry can also provide indirect savings of 25-35% in gas consumption; upwards from 25% in labour costs and 20-30% by prolonging the life of linens.

With the recent media coverage surrounding the spread of superbugs such as MRSA and C. difficile, along with the Governments introduction of targets to reduce cases of such, awareness of the need for thorough disinfection has never been higher. With better hygiene practices being implemented across the caring sectors, now is the time to make sure your sites infection control procedures are as comprehensive as possible.

There have been various test studies conducted during 2004-2005 in the United Kingdom to determine particular effects and efficacy of ozone in commercial laundering systems. Examples of the findings:

### **Comparison: Hot Water (75-80C) –v- Ozone Wash Cycle –v- C. Difficile spores:**

A laboratory test was conducted comparing the effects of hot water (75/ and 80/C) over 15 minutes to 2.5-minutes laundering using cold water in the Ozone Laundry Systems on Clostridium difficile spores. C difficile is an intestinal bacterium that causes hospital / community acquired diarrhoea which can cause serious illness and even death. The bacterium produces toxins which damage the cells lining the bowel. C. difficile survives well outside the body because it is a spore-forming microorganism.

### **Results Test 1:**

Hot Water Results conducted at 75/C over 15 minutes, and at 80/C over 15 minutes and shows the reduction in levels of C. difficile spores was insignificant .

### **Results Test 2:**

Ozone Cycle shows at ambient temperature (cold water) after just 2.5 minutes no viable trace of spores could be found.

### **Further Tests:**

- Ambient temperature (cold) with no ozone = bacteria
- Thermal @ 75°C with no ozone = bacteria
- Ambient temperature (cold) with ozone = no bacteria after 2.5 mins



# Proven Disinfection

Tests carried out by a major independent laundry test house in the UK achieved log reduction as per ISO14698.

Examples of log reduction in laundry application using ISO14698 and a target kill rate of >log 5 (note chemicals claiming to kill C.Diff require high concentration and cannot achieve better than log 3 which is not acceptable).

- MRSA - > Log 7
- Enterococcus Faecalis > Log 7
- Clostridium Difficile > Log 5
- Bacillus Cereus > Log 5



## Micro-biological test results

Inactivation of the test organisms is shown in Table 3. The target kill was taken as >5 log<sub>10</sub> as recommended by ISO 14698.

Test organism	Test swatch	3L/min Ozone		6L/min ozone	
		CFU/swatch (log)	Log kill	CFU/swatch (log)	Log kill
<i>Staphylococcus aureus</i> (MRSA)	Control (mean)	2.88x10 <sup>8</sup> (8.46)			
	Swatch 1	<8 (<0.90)	>7.56	<8 (<0.90)	>7.56
	Swatch 2	<8 (<0.90)	>7.56	<8 (<0.90)	>7.56
	Swatch 3	136 (2.13)	6.33	<8 (<0.90)	>7.56
	Swatch 4	<8 (<0.90)	>7.56	<8 (<0.90)	>7.56
	Swatch 5	8 (0.90)	7.56	<8 (<0.90)	>7.56
<i>Enterococcus faecalis</i>	Control (mean)	1.10x10 <sup>8</sup> (8.04)			
	Swatch 1	<8 (<0.90)	>7.14	<8 (<0.90)	>7.14
	Swatch 2	<8 (<0.90)	>7.14	<8 (<0.90)	>7.14
	Swatch 3	<8 (<0.90)	>7.14	<8 (<0.90)	>7.14
	Swatch 4	<8 (<0.90)	>7.14	<8 (<0.90)	>7.14
	Swatch 5	<8 (<0.90)	>7.14	<8 (<0.90)	>7.14
<i>Bacillus cereus</i>	Control (mean)	7.00x10 <sup>7</sup> (7.60)			
	Swatch 1	32 (1.51)	6.09	48 (1.68)	5.92
	Swatch 2	56 (1.75)	5.85	24 (1.38)	6.22
	Swatch 3	16 (1.20)	6.40	24 (1.38)	6.22
	Swatch 4	16 (1.20)	6.40	56 (1.75)	5.85
	Swatch 5	40 (1.60)	6.00	8 (0.90)	6.70
<i>Clostridium difficile</i>	Control (mean)	1.01x10 <sup>7</sup> (7.01)			
	Swatch 1	70 (1.85)	5.16	491 (2.69)	4.32
	Swatch 2	24 (1.38)	5.63	186 (2.27)	4.74
	Swatch 3	80 (1.90)	5.11	164 (2.22)	4.79
	Swatch 4	34 (1.53)	5.48	208 (2.32)	4.69
	Swatch 5	52 (1.72)	5.29	100 (2.00)	5.01

Disinfection levels of >5 log<sub>10</sub> were achieved under both levels of ozone for three of the test organisms although the kill level for *Bacillus cereus* was lower than that for MRSA and *E faecalis*.

# Typical Savings Examples:

## Small Care / Nursing Home With 40kg Washing Capacity:

A Small Care / Nursing Home With 2 x 20kg Washing Machines using thermal disinfection cycles would save approx. £1164-00 per month / £13968-00 per annum! At the same time reducing their carbon footprint by 9.4 cubic tons of CO2 per year equivalent to a Boeing 737 aircraft flying 38 hours i.e flying London to New York 5 times! Washing in cold water as opposed to costly heating cycles the site would cut at least 20mins (up to 45 mins) using the ozone laundry system –v- thermal disinfection cycle 8 times per day. This equates to 200 mins / 3 hours 20 mins every day of labour savings or the ability to utilise that labour elsewhere within the business.

WATER & SEWER	
Total KG Wash Capacity	40
Cycles Per Day	8
Total KG Per Day	320
Operating Days Per Year	312
Total KG Per Year	99,840
Litres Per KG	20
Total Litres Water Per Year	1,996,800
Water Reduction Via Ozone System	35%
Total Litres Saved Per Year	698,880
Litres Per Cubic Metre	1,000
<b>Annual Cubic Metres Saved</b>	<b>698.88</b>



ENERGY	
Hot Water @ 35% Of Total Water Used	698,880
KG Per Litre Of Water	1
Weight Of Water / KG Per Year	698,880
° (C) of Temp Rise From 15° to 71°	56
BTU's Required For Temp Increase	39,137,280
Heater Element Efficiency	70%
Total BTU's Used	50,878,464
BTU'S Per KWH (calorific value)	3412.16
KWH Saved	14,911
Allowance For Occasional Hot Cycles	10%
<b>Total KWH Saved Per Year</b>	<b>13,420</b>

CHEMICALS	DETERGENT	DESTAINER	CONDITIONER	ALKALI BOOST
Amount Paid Per 10L	£33.00	£45.00	£20.00	£20.00
Amount Mls Per KG	12	10	8	8
Total Used Mls Per Year	1,198,080	998,400	798,720	798,720
Reduction Mls Per KG	4	2	8	2
Reduction Mls Per Year	399,360	199,680	798,720	199,680
Total Saved Per Year	£1,317.89	£898.56	£1,597.44	£399.36
<b>Total Chemical Savings</b>				<b>£4,213.25</b>

APPROX. MINS SAVED PER CYCLE	CYCLES PER DAY	APPROX. MINS RECOVERED PER DAY	TOTAL HOURS RECOVERED PER YEAR	£ SAVED ASSUMING MINIMUM WAGE
20	8	160	832	£5,249.92

ANNUAL SAVINGS	EST UNITS SAVED	ESTIMATED ANNUAL SAVINGS
WATER/Cubic Meter	698.88	£726.84
SEWER/Cubic Meter	698.88	£1,311.80
CHEMICALS SAVED	99,840	£4,213.25
ENERGY RATE/KWH	13,420	£1,610.38
Reduced Drying Time KWH	2,684	£322.08
Labour Cost Saving	832	£5,058.56
LINEN REPLACEMENTS		To Be Discussed
<b>TOTAL FIRST YEAR SAVINGS:</b>		<b>£13,242.90</b>
<b>TOTAL MONTHLY SAVING</b>		<b>£1,103.57</b>
<b>MONTHLY RENTAL</b>		TBA
<b>NET MONTHLY SAVING</b>		TBA
<b>ANNUAL SAVING</b>		TBA
<b>SAVINGS OVER 8 YEARS</b>		TBA

ENVIRONMENTAL IMPACT CARBON FOOTPRINT OFFSET
ACTUAL KWH SAVED
13,420
MULTIPLIED BY RATE FOR KWH - LBS CO2
1.55
DIVIDED BY CONVERSION RATE FROM LBS CO2 TO METRIC TONS CO2
2205
POLLUTION SAVED METRIC TONS OF CO2
<b>9.4 Per Annum</b>

## Medium Care / Nursing Home With 90kg Washing Capacity:

A Medium Care / Nursing Home With 3 x 30kg Washing Machines using thermal disinfection cycles would save approx. £1960-00 per month / £23524-00 per annum! At the same time reducing their carbon footprint by 21.2 cubic tons of CO2 per year equivalent to a Boeing 737 aircraft flying 85 hours i.e flying London to New York more than 10 times! Washing in cold water as opposed to costly heating cycles the site would cut at least 20mins (up to 45 mins) using the ozone laundry system –v- thermal disinfection cycle 8 times per day. This equates to 200 mins / 3 hours 20 mins every day of labour savings or the ability to utilise that labour elsewhere within the business.

WATER & SEWER	
Total KG Wash Capacity	90
Cycles Per Day	8
Total KG Per Day	720
Operating Days Per Year	312
Total KG Per Year	224,640
Litres Per KG	20
Total Litres Water Per Year	4,492,800
Water Reduction Via Ozone System	35%
Total Litres Saved Per Year	1,572,480
Litres Per Cubic Metre	1,000
<b>Annual Cubic Metres Saved</b>	<b>1572.48</b>



ENERGY	
Hot Water @ 35% Of Total Water Used	1,572,480
KG Per Litre Of Water	1
Weight Of Water / KG Per Year	1,572,480
° (C) of Temp Rise From 15° to 71°	56
BTU's Required For Temp Increase	88,058,880
Heater Element Efficiency	70%
Total BTU's Used	114,476,544
BTU'S Per KWH (calorific value)	3412.16
KWH Saved	33,550
Allowance For Occasional Hot Cycles	10%
<b>Total KWH Saved Per Year</b>	<b>30,195</b>

CHEMICALS	DETERGENT	DESTAINER	CONDITIONER	ALKALI BOOST
Amount Paid Per 10L	£33.00	£45.00	£20.00	£20.00
Amount Mls Per KG	12	10	8	8
Total Used Mls Per Year	2,695,680	2,246,400	1,797,120	1,797,120
Reduction Mls Per KG	4	2	8	2
Reduction Mls Per Year	898,560	449,280	1,797,120	449,280
Total Saved Per Year	£2,965.25	£2,021.76	£3,594.24	£898.56
<b>Total Chemical Savings</b>				<b>£9,479.81</b>

APPROX. MINS SAVED PER CYCLE	CYCLES PER DAY	APPROX. MINS RECOVERED PER DAY	TOTAL HOURS RECOVERED PER YEAR	£ SAVED ASSUMING MINIMUM WAGE
20	8	160	832	£5,249.92

ANNUAL SAVINGS	EST UNITS SAVED	ESTIMATED ANNUAL SAVINGS
WATER/Cubic Meter	1572.48	£1,635.38
SEWER/Cubic Meter	1572.48	£2,951.54
CHEMICALS SAVED	224,640	£9,479.81
ENERGY RATE/KWH	30,195	£3,623.35
Reduced Drying Time KWH	6,039	£724.67
Labour Cost Saving	832	£5,058.56
LINEN REPLACEMENTS		To Be Discussed
<b>TOTAL FIRST YEAR SAVINGS:</b>		<b>£23,473.32</b>
TOTAL MONTHLY SAVING		£1,956.11
MONTHLY RENTAL		TBA
NET MONTHLY SAVING		TBA
ANNUAL SAVING		TBA
SAVINGS OVER 8 YEARS		TBA

ENVIRONMENTAL IMPACT CARBON FOOTPRINT OFFSET	
ACTUAL KWH SAVED	30,195
MULTIPLIED BY RATE FOR KWH - LBS CO2	1.55
DIVIDED BY CONVERSION RATE FROM LBS CO2 TO METRIC TONS CO2	2205
POLLUTION SAVED METRIC TONS OF CO2	<b>21.2 Per Annum</b>

## Hotel / Laundry With 250kg Washing Capacity:

Hotel / Laundry With 250kg Washing Capacity using 60 degree cycles 8 times per day would save approx. £4415 per month / £52981 per annum! Also reducing their carbon footprint by 47.4 cubic tons CO2 per year equivalent to a Boeing 737 aircraft flying 190 hours i.e London to New York over 24 times! Washing in cold water as opposed to costly heating cycles would cut at least 20mins (up to 45 mins) using ozone laundry system –v- thermal disinfection cycle 8 times per day. Equal to 200 mins / 3 hours 20 mins every day of labour savings or the ability to utilise that labour elsewhere within the business.

WATER & SEWER	
Total KG Wash Capacity	250
Cycles Per Day	8
Total KG Per Day	2,000
Operating Days Per Year	312
Total KG Per Year	624,000
Litres Per KG	20
Total Litres Water Per Year	12,480,000
Water Reduction Via Ozone System	35%
Total Litres Saved Per Year	4,368,000
Litres Per Cubic Metre	1,000
<b>Annual Cubic Metres Saved</b>	<b>4368</b>



ENERGY	
Hot Water @ 35% Of Total Water Used	4,368,000
KG Per Litre Of Water	1
Weight Of Water / KG Per Year	4,368,000
° (C) of Temp Rise From 15° to 60°	45
BTU's Required For Temp Increase	196,560,000
Heater Element Efficiency	70%
Total BTU's Used	255,528,000
BTU'S Per KWH (calorific value)	3412.16
KWH Saved	74,887
Allowance For Occasional Hot Cycles	10%
<b>Total KWH Saved Per Year</b>	<b>67,399</b>

CHEMICALS	DETERGENT	DESTAINER	CONDITIONER	ALKALI BOOST
Amount Paid Per 10L	£33.00	£45.00	£20.00	£20.00
Amount Mls Per KG	12	10	8	8
Total Used Mls Per Year	7,488,000	6,240,000	4,992,000	4,992,000
Reduction Mls Per KG	4	2	8	2
Reduction Mls Per Year	2,496,000	1,248,000	4,992,000	1,248,000
Total Saved Per Year	£8,236.80	£5,616.00	£9,984.00	£2,496.00
<b>Total Chemical Savings</b>				<b>£26,332.80</b>

APPROX. MINS SAVED PER CYCLE	CYCLES PER DAY	APPROX. MINS RECOVERED PER DAY	TOTAL HOURS RECOVERED PER YEAR	£ SAVED ASSUMING MINIMUM WAGE
20	8	160	832	£5,249.92

ANNUAL SAVINGS	EST UNITS SAVED	ESTIMATED ANNUAL SAVINGS
WATER/Cubic Meter	4368	£4,542.72
SEWER/Cubic Meter	4368	£8,198.74
CHEMICALS SAVED	624,000	£26,332.80
ENERGY RATE/KWH	67,399	£8,087.85
Reduced Drying Time KWH	13,480	£1,617.57
Labour Cost Saving	832	£5,058.56
LINEN REPLACEMENTS		To Be Discussed
<b>TOTAL FIRST YEAR SAVINGS:</b>		<b>£53,838.23</b>
TOTAL MONTHLY SAVING		£4,486.52
MONTHLY RENTAL		TBA
NET MONTHLY SAVING		TBA
ANNUAL SAVING		TBA
SAVINGS OVER 8 YEARS		TBA

ENVIRONMENTAL IMPACT CARBON FOOTPRINT OFFSET	
ACTUAL KWH SAVED	67,399
MULTIPLIED BY RATE FOR KWH - LBS CO2	1.55
DIVIDED BY CONVERSION RATE FROM LBS CO2 TO METRIC TONS CO2	2205
POLLUTION SAVED METRIC TONS OF CO2	<b>47.4 Per Annum</b>

## **Some Of The Benefits Explained:**

### **Guaranteed Disinfection On Every Cycle:**

As ozone is dosed into the machine on each stage of the wash cycle, it provides disinfection to every stage of the cycle. This ensures that should accidental cross contamination occur in the laundry, all items are automatically disinfected in the wash process.

### **Shorter Wash Cycles:**

Thermal disinfection can add up to 45mins to the length of a wash cycle (due to the time taken to heat the water to the higher temperature, the additional cycle process and holding the load in the hot water for the required length of time). The Ozone Laundry System allows you to maintain ambient (cold) washing cycle times whilst providing proven disinfection.

### **Reduced Drying Time:**

Ozone opens the fibres of the fabric, allowing more water to be removed in the spin. Therefore the laundry contains less moisture and requires less drying time.

### **Fresher Smelling Fabrics And A Fresher Smelling Laundry:**

Ozone O<sub>3</sub> creates the “smell of fresh air” which commonly occurs after a thunderstorm, and in a laundry it does the same thing. It leaves fabric smelling fresh and clean, and helps deodourise the laundry environment.

### **Improved Fabric Quality:**

Fabrics feel softer as the Ozone O<sub>3</sub> helps to open up the fibres.

### **Reduced Costs:**

Energy consumption / costs are drastically cut due to a reduced requirement for heating of water for thermal disinfection as well as reduced drying times.

### **Electricity Consumption:**

Removing thermal disinfection cycle reduces the electricity required for heating. Shorter cycles means less energy consumption and ozonated cycles results in less water retention therefore drying requirements are shortened resulting in further reductions in energy consumption within the tumbler dryer.

## Hot Water Consumption:

Lower as removing the thermal disinfection cycle.

## Detergent:

Ozone is an oxidising agent which activates to a higher level resulting in lower dosages of detergent being required. Ozone has bleaching properties which negates the need for duplicate products.

## Gas Consumption:

Ozone opens the fibres of the fabric, allowing more water to be removed in the spin cycle of the wash. In the case of gas fired heating systems for the hot water, this would no longer feature as the cycles would be cold water cycles. In those instances savings would be far greater still.

## Labour Costs:

As lower temperature wash cycles are quicker, sites can get more done in shorter time, and therefore save labour costs. You can save circa 20 mins per ozone cycle –v- hot wash i.e. 60 degree and more on thermal disinfection cycles. Even at 8 cycles per day that would be 160 mins recovered which equates to 832 hours per year in labour savings or re usable labour for other duties.

## Linen Life:

Over time continual high temperature, thermal disinfection washes remove colour from fabric and can start to breakdown the fibres. Controlled testing by The International Fabricare Institute showed increased linen life as high as 50%. Actual savings for linen replacement are difficult to calculate due to varying linen pilferage rate and product quality.



## FAQ's:

## Is there any risk to laundry workers using the Ozone Laundry System?

NO, the Ozone Laundry System doses directly into the water in the drum. By dosing directly into the water, it greatly reduces the risk of ozone escaping from the washer, as the gas is partially soluble so dissolves, it also ensures that it gets to the heart of the wash. In very high concentrations, Ozone is toxic. The maximum permissible continuous exposure limit to ozone in air is 0.2ppm, however it is possible to detect ozone by smell at levels as low as 0.01ppm. The Ozone Laundry System presents no risk to health as there are in-built safety sensors to prevent over production and leaks of ozone, which will switch the unit off if the concentration in the air reaches 0.1ppm.

## Does the Ozone Laundry System affect the pH balance of the wash water?

No, ozone has a neutral pH (about 7.0) so does not affect the pH balance of the wash water.

## Does the Ozone Laundry System affect the types of detergent or destainer that can be used?

No, there are no limitations on the chemicals that can be used in conjunction with the system, and as ozone has oxidising properties, use of the system can actually enhance the wash quality. This does however mean that some care should be given when using bleaches. When a Ozone Laundry System unit is fitted, OLS will advise the site on what should be used in conjunction with the system to provide the best wash results.

## Servicing of the Ozone Laundry System:

The system will need to be serviced periodically which would be carried out by specially trained Ozone Laundry System engineers.



## Contact Us

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