

# **AQUAWING OZONE SYSTEM SPECIFICATION**

## **FOR PCI RETREAT LAUNDRY**

### **SECTION 1- GENERAL REQUIREMENTS:**

This specification covers the materials and services necessary for installation of an ozone generating system into the PCI Laundry located at SCI Retreat, Hunlock Creek, Pa. The ozone system is at this time for installation only for the PCI Retreat laundry, not the PCI laundries at Frackville or Somerset. The requirements in this bid will be met through a cooperative effort of the bid selectee, PCI, and PAC industries, the Milnor supplier on State contract, for laundry equipment throughout the commonwealth.

General Parameters are: (1) The ozone system must support 10 stand-alone washer-extractors in the Retreat laundry. Specifically -1-55lb, 1-95lb, 4-165lb, 1-450lb, and 3-480lb. washers. This system procurement is to be completely purchased and not of a rental or leased nature.

(2) The ozone system must be of a continuous nature throughout the wash cycle. (not initial or single input)

(3) Each washer shall have a colorful monitoring sensor indicating injected ozone mounted prominently on the front of the washer.

(4) System must maintain 1.00PPM of ozone in the wash wheel.

(5) Ozone is to be introduced by the fusion injector method directly into the sump of each washer.

(6) Because of space requirements in the mechanical room, the complete system shall have no more than 8 total ozone generators and 3 oxygen concentrators.

(7) All ozone transporting tubes and hoses will be either Teflon or stainless steel.

(8) The entire project will maintain a system controller that will discontinue ozone production if ambient levels reach the 0.1ppm as pre-determined by OSHA guidelines.

(9) Bidder must have and can supply factory trained and authorized service technicians.

(10) Bidder shall have service technicians that reside within 100 miles of PCI Retreat.

## **SECTION 2-SPECIFIC REQUIREMENTS**

What follows below are specific specifications for three sized wide body tower ozone systems in support of the ten present stand-alone washer extractors at PCI Retreat:

**Type: AFW -2-0-2**

**Quantity: 1 (one)**

**This is a wide body tower ozone system with 4 ozone generators, 1 oxygen concentrator, 1 interface control module, 1 AF- indicator cartridge, VO3 ozone validation and ozone room monitoring sensor.**

**This system will deliver continuous ozone to 1 -55Lb, 1-95lbs and 2-165lbs Milnor washers**

### **1. System Description:**

- a. ***Continuous Interjection of Ozone:*** Automatic variable ozone output for Four (4) separate generators that regulates ozone levels in each washer and guarantees bug kill. System will maintain 1.00PPM of ozone in the wash wheel, guaranteeing bug kill.
- b. ***Validated Ozone (VO3):*** monitors the sensors mounted at each washer and when necessary ozone levels have been achieved and maintained for a set time, VO3 notifies users that disinfection and sanitization have been achieved with a green light mountable on each washer. Variable ozone constantly works to make up for operator and cycle errors such as under loading, overloading, cycle selection, chemical amounts and soils levels
- c. ***System Controller:*** Serves as an interface between washers and Aqua Fusion system. It houses the variable ozone technology and contains a redundant a room-monitor with each system to measure and manage the ambient levels of the ozone. These monitors will discontinue ozone production if ambient levels reach 0.1ppm as determined by OSHA guidelines.
- d. ***Sump Injection:*** Ozone is introduced into the wash wheel by installing a fusion injector into the sump of each washer.
- e. ***Ozone Generators:*** Separate Generators for each washer to ensure proper amounts of ozone is being injected to ensure disinfection.
- f. ***Indicator Cartridge:*** This Cartridge is a desiccant dryer cartridge that is added in-line from the oxygen concentrator as a visual maintenance aid and is back-up air dryer.
- g. ***Oxygen Concentrator:*** dehumidifies ambient air and raises oxygen concentration from the atmospheric level (about 21%) to approximately 95%.

### **2. Specifications:**

- a. **Oxygen feed: AF-12 Oxygen Generator**
  - i. 12 chamber sieve bed module
  - ii. 220 volt two cylinder serviceable compressor
  - iii. Built-in hour meter
  - iv. 110 cfm cooling fan

- v. Compressor outlet heat exchanger
  - vi. output of 90% oxygen +/- 5% at 12 scfh at 10 psi with a dew point of 100 degrees
- b. Generators
  - i. Two (2) AF-150 Generators
    - 1. Corona discharge
    - 2. High Frequency: 9KHz
    - 3. Fully adjustable ozone output: 0-100%
    - 4. Cold contact output control: On/Off
    - 5. 4-20 control
    - 6. 0-100% LED operation display
    - 7. Solid state electronics with overload and spike control
    - 8. 10 psi cell configuration
    - 9. Internal psi and flow gauge
    - 10. External flow adjustment
    - 11. Producing 15 grams of ozone at 6% per hour at flow of 3 scfh
  - ii. Two (2) AF-100 Generators
    - 1. Corona discharge
    - 2. High frequency
    - 3. Fully Adjustable output
    - 4. cold contact controlled on/off
    - 5. 4-20 control
    - 6. 0 – 100% LED operation display
    - 7. Solid-state electronics with overload and spice control
    - 8. LOW psi cell
    - 9. producing 4 grams of ozone at 4% per hour at a flow of 3 scfh
- c. System Controller: AFI-04
  - i. 10 amp two pole breaker
  - ii. Qty. 4 washer input signals: 110/220 volt
  - iii. Qty. 4 220 outputs
  - iv. Qty. 1 room monitoring module with automatic shut down and reset
  - v. Four (4) wash wheel monitoring modules with generator on/off switching to control wash wheel ozone levels (one per washer)
  - vi. External LED indicating system operation
  - vii. External on/off power switch
- d. Stand
  - i. ESD (electro static discharge) compatible
  - ii. Clear anodized extruded aluminum
  - iii. Vibration proof fasteners
  - iv. Anti-skid feet with leveling adjustment
  - v. clean room compatible
- e. Fusion injectors

- i. Stainless steel mounting hardware
    - ii. 304 Stainless Interfusor injector with Patented Static Mixing Chamber
    - iii. Versatile compression mounting system
  - f. Pneumatic controls
    - i. Airflow regulator – 0-10 scfh
    - ii. Air pressure regulator with gauge: 0-3 psi
- 3. Output Results:
  - a. Variable ozone: 99.9999% bug kill on every load. These results were established by an independent third party and documented in a report from Microsearch Laboratories, LTD
  - b. Tests were performed by D. O'Conner B.Sc.Ci.Biol M.I.F.S.T and Dr. Richard Neale, B.Sc PjD, MichemE.
  - c. All tests performed on the super bugs MRSA, C.diff, and Aspergilla's Niger...TOTAL KILL – NO VIABLE TRACE
  - d. Validated to kill HIV and Hepatitis Strands
- 4. Miscellaneous
  - a. System upgradeable for larger or additional washers
  - b. Systems modular design allows for new technology upgrades
  - c. All ozone transporting tubes and hoses Teflon or Stainless Steel
  - d. Supply Voltage: 220 Volt 60 hz 15 amp supply
  - e. Stand made from clear anodized extruded aluminum
    - i. Overall Width: 24 inches
    - ii. Overall height: 76 inches
    - iii. Overall depth: 22 inches

Quantity: 1 (one)

This is a wide body tower ozone system with 2 ozone generators, 1 oxygen concentrator, 1 interface control module, 1 AF- indicator cartridge, VO3 ozone validation and ozone room monitoring sensor.

This system will deliver continuous ozone to 2-165lbs Milnor washers

**1. System Description:**

- a. *Continuous Interjection of Ozone:* Automatic variable ozone output for Two (2) separate generators that regulates ozone levels in each washer and guarantees bug kill. System will maintain 1.00PPM of ozone in the wash wheel, guaranteeing bug kill.
- b. *Validated Ozone (VO3):* monitors the sensors mounted at each washer and when necessary ozone levels have been achieved and maintained for a set time, VO3 notifies users that disinfection and sanitization have been achieved with a green light mountable on each washer. Variable ozone constantly works to make up for operator and cycle errors such as under loading, overloading, cycle selection, chemical amounts and soils levels
- c. *System Controller:* Serves as an interface between washers and Aqua Fusion system. It houses the variable ozone technology and contains a redundant a room-monitor with each system to measure and manage the ambient levels of the ozone. These monitors will discontinue ozone production if ambient levels reach 0.1ppm as determined by OSHA guidelines.
- d. *Sump Injection:* Ozone is introduced into the wash wheel by installing a fusion injector into the sump of each washer.
- e. *Ozone Generators:* Separate Generators for each washer to ensure proper amounts of ozone is being injected to ensure disinfection.
- f. *Indicator Cartridge:* This Cartridge is a desiccant dryer cartridge that is added in-line from the oxygen concentrator as a visual maintenance aid and is back-up air dryer.
- g. *Oxygen Concentrator:* dehumidifies ambient air and raises oxygen concentration from the atmospheric level (about 21%) to approximately 95%.

**2. Specifications**

- a. Oxygen feed: AF-12 Oxygen Generator
  - i. 12 chamber sieve bed module
  - ii. 220 volt two cylinder serviceable compressor
  - iii. Built-in hour meter
  - iv. 110 cfm cooling fan
  - v. Compressor outlet heat exchanger
  - vi. output of 90% oxygen +/- 5% at 12 scfh at 10 psi with a dew point of 100 degrees
- b. Generators
  - i. Two (2) AF-150 Generators

1. Corona discharge
2. High Frequency: 9KHz
3. Fully adjustable ozone output: 0-100%
4. Cold contact output control: On/Off
5. 4-20 control
6. 0-100% LED operation display
7. Solid state electronics with overload and spike control
8. 10 psi cell configuration
9. Internal psi and flow gauge
10. External flow adjustment
11. Producing 15 grams of ozone at 6% per hour at flow of 3 scfh

**c. System Controller: AFI-04**

- i. 10 amp two pole breaker
- ii. Qty. 2 washer input signals: 110/220 volt
- iii. Qty. 2 220 outputs
- iv. Qty. 1 room monitoring module with automatic shut down and reset
- v. Two (2) wash wheel monitoring modules with generator on/off switching to control wash wheel ozone levels (one per washer)
- vi. External LED indicating system operation
- vii. External on/off power switch

**d. Stand**

- i. ESD (electro static discharge) compatible
- ii. Clear anodized extruded aluminum
- iii. Vibration proof fasteners
- iv. Anti-skid feet with leveling adjustment
- v. clean room compatible

**e. Fusion injectors**

- i. Stainless steel mounting hardware
- ii. 304 Stainless Interfusor injector with Patented Static Mixing Chamber
- iii. Versatile compression mounting system

**f. Pneumatic controls**

- i. Airflow regulator – 0-10 scfh
- ii. Air pressure regulator with gauge: 0-3 psi

**3. Output Results**

- a. Variable ozone: 99.9999% bug kill on every load. These results were established by an independent third party and documented in a report from Microsearch Laboratories, LTD
- b. Tests were performed by D. O'Conner B.Sc.Ci.Biol M.I.F.S.T and Dr. Richard Neale, B.Sc PjD, MichemE.
- c. All tests performed on the super bugs MRSA, C.diff, and Aspergilla's Niger...TOTAL KILL – NO VIABLE TRACE
- d. Validated to kill HIV and Hepatitis Strands

#### 4. Miscellaneous

- a. System upgradeable for larger or additional washers
- b. Systems modular design allows for new technology upgrades
- c. All ozone transporting tubes and hoses Teflon or Stainless Steel
- d. Supply Voltage: 220 Volt 60 hz 15 amp supply
- e. Stand made from clear anodized extruded aluminum
  - i. Overall Width: 24 inches
  - ii. Overall height: 76 inches
  - iii. Overall depth: 22 inches

Type: AFW -0-0-0-2

QUANTITY: 2 (TWO)

This is a wide body tower ozone system with 2 ozone generators, 1 oxygen concentrator, 1 interface control module, 1 AF- indicator cartridge, VO3 ozone validation and ozone room monitoring sensor.

One AFW -0-0-0-2 system will deliver continuous ozone to 2-480lb Washex washers and the other AFW -0-0-0-2 will deliver ozone to 1- 480lb Washex washers and 1-450lb Milnor washer

#### 1. System Description:

- a. *Continuous Interjection of Ozone:* Automatic variable ozone output for Two (2) separate generators that regulates ozone levels in each washer and guarantees bug kill. System will maintain 1.00PPM of ozone in the wash wheel, guaranteeing bug kill.
- b. *Validated Ozone (VO3):* monitors the sensors mounted at each washer and when necessary ozone levels have been achieved and maintained for a set time, VO3 notifies users that disinfection and sanitization have been achieved with a green light mountable on each washer. Variable ozone constantly works to make up for operator and cycle errors such as under loading, overloading, cycle selection, chemical amounts and soils levels
- c. *System Controller:* Serves as an interface between washers and Aqua Fusion system. It houses the variable ozone technology and contains a redundant a room-monitor with each system to measure and manage the ambient levels of the ozone. These monitors will discontinue ozone production if ambient levels reach 0.1ppm as determined by OSHA guidelines.
- d. *Sump Injection:* Ozone is introduced into the wash wheel by installing a fusion injector into the sump of each washer.
- e. *Ozone Generators:* Separate Generators for each washer to ensure proper amounts of ozone is being injected to ensure disinfection.

- f. **Indicator Cartridge:** This Cartridge is a desiccant dryer cartridge that is added in-line from the oxygen concentrator as a visual maintenance aid and is back-up air dryer.
- g. **Oxygen Concentrator:** dehumidifies ambient air and raises oxygen concentration from the atmospheric level (about 21%) to approximately 95%.

## 2. Specifications:

- a. **Oxygen feed: AF-12 Oxygen Generator**
  - i. 12 chamber sieve bed module
  - ii. 220 volt two cylinder serviceable compressor
  - iii. Built-in hour meter
  - iv. 110 cfm cooling fan
  - v. Compressor outlet heat exchanger
  - vi. output of 90% oxygen +/- 5% at 12 scfh at 10 psi with a dew point of 100 degrees
- b. **Generators**
  - i. **Two (2) AF-200 Generators**
    - 1. Corona discharge
    - 2. High Frequency: 9KHz
    - 3. Fully adjustable ozone output: 0-100%
    - 4. Cold contact output control: On/Off
    - 5. 4-20 control
    - 6. 0-100% LED operation display
    - 7. Solid state electronics with overload and spike control
    - 8. 10 psi dual cell configuration
    - 9. Internal psi and flow gauge
    - 10. External flow adjustment
    - 11. Producing 27 grams of ozone at 6% per hour at flow of 3 scfh
- c. **System Controller: AFI-04**
  - i. 10 amp two pole breaker
  - ii. Qty. 2 washer input signals: 110/220 volt
  - iii. Qty. 2 220 outputs
  - iv. Qty. 1 room monitoring module with automatic shut down and reset
  - v. Two (2) wash wheel monitoring modules with generator on/off switching to control wash wheel ozone levels (one per washer)
  - vi. External LED indicating system operation
  - vii. External on/off power switch
- d. **Stand**
  - i. ESD (electro static discharge) compatible
  - ii. Clear anodized extruded aluminum
  - iii. Vibration proof fasteners
  - iv. Anti-skid feet with leveling adjustment
  - v. clean room compatible
- e. **Fusion injectors**



- i. Stainless steel mounting hardware
  - ii. 304 Stainless Interfusor injector with Patented Static Mixing Chamber
  - iii. Versatile compression mounting system
- f. Pneumatic controls
  - i. Airflow regulator – 0-10 scfh
  - ii. Air pressure regulator with gauge: 0-3 psi

### **3. Output Results**

- a. Variable ozone: 99.9999% bug kill on every load. These results were established by an independent third party and documented in a report from Microsearch Laboratories, LTD
- b. Tests were performed by D. O'Conner B.Sc.Ci.Biol M.I.F.S.T and Dr. Richard Neale, B.Sc PjD, MichemE.
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### **4. Miscellaneous**

- a. System upgradeable for larger or additional washers
- b. Systems modular design allows for new technology upgrades
- c. All ozone transporting tubes and hoses Teflon or Stainless Steel
- d. Supply Voltage: 220 Volt 60 hz 15 amp supply
- e. Stand made from clear anodized extruded aluminum
  - i. Overall Width: 24 inches
  - ii. Overall height: 76 inches
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