

## **DESOZONE OZONE CONTROL SYSTEM**



### **Odor Control**

Sewage and industrial plants located near residential areas can be subject to political and legal problems if these facilities produce unpleasant odors. Odors in the vicinity of treatment plants are generally gaseous inorganic products or highly volatile organic compounds. Ammonia and hydrogen sulfide are considered to be the main causes of odor when the sewage comes from mainly households.

### **Ozono Elettronica Internazionale (OEI)**

The DESOZONE odor control system is designed and built by OEI of Milan, Italy. OEI has been producing odor control systems for 30 years, supplying both packaged and custom designed systems. They have carried out a large number of odor control projects. As a result they have the experience and design skill to ensure a safe and effective design even for complex odor control challenges.

DESOZONE is Available from Spartan Environmental Technologies, LLC  
Phone : 800-492-1252, Fax : 440-368-3569, e-mail : [info@SpartanWaterTreatment.com](mailto:info@SpartanWaterTreatment.com)  
Web : [www.SpartanWaterTreatment.com](http://www.SpartanWaterTreatment.com)

## The DESOZONE Odor Control System

Spartan offers the DESOZONE odor control system which can be configured as a single or dual stage scrubber. The DESOZONE system employs a horizontal packed bed design. In each stage the scrubbing solution is sprayed over the packing and flows downward to a storage basin. Each stage has a mist eliminator designed to remove 90% of the particles 5 microns and larger from the air stream. A centrifugal pump recycles the scrubbing solution in each stage back to the spray nozzles. When scrubbing with sodium hydroxide, ozone is added as an oxidant. Ozone has been chosen because it is a very efficient in oxidizing odor causing compounds relative to other oxidants. The ozone is produced by an integrated ozone generator using an air feed and is mixed with the scrubbing solution via an inline static mixer.

The tables below provide technical data on the operation of the DESOZONE system.

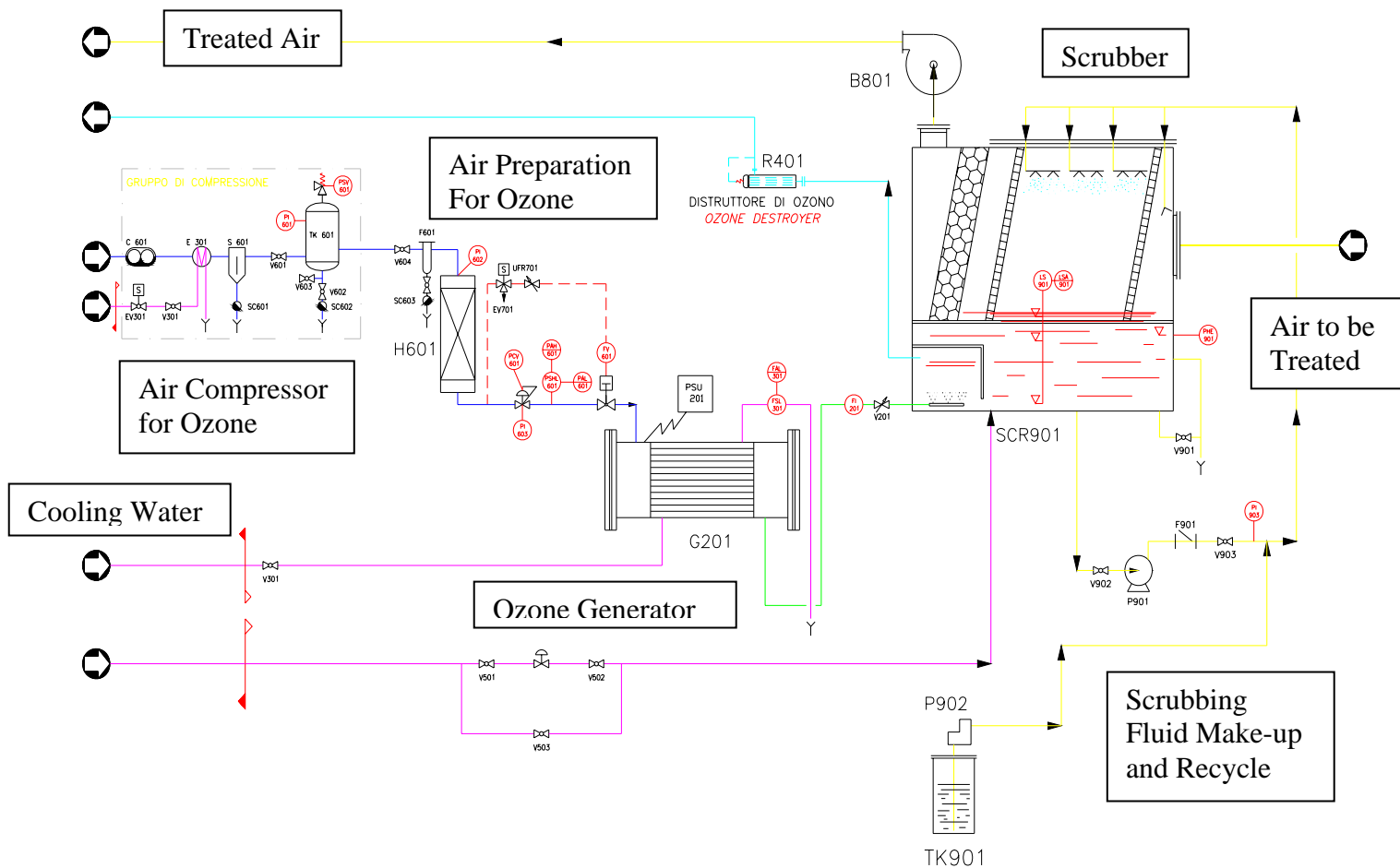
<b>Air to Treat (Nm<sup>3</sup>/h)</b>	<b>250</b>	<b>500</b>	<b>1000</b>	<b>2500</b>
<b>Air to Treat (SCFM)</b>	<b>156</b>	<b>313</b>	<b>625</b>	<b>1563</b>
<b>O<sub>3</sub> Required (lb/day)</b>	0.11	0.21	0.42	1.06
<b>O<sub>3</sub> Generator Power (kW)</b>	0.03	0.06	0.12	0.25
<b>Total Power (kW)</b>	0.9	1.2	2.8	3.6
<b>Compressed Air (SCFM)</b>	0.3	0.6	1.3	3.1
<b>Blower Power (kW)</b>	.5	.75	1.5	2.2
<b>Recycle Pump Flow (gpm)</b>	4.4	4.4	8.8	22
<b>Recycle Pump Power (kW)</b>	0.3	0.3	1.1	1.1
<b>Cooling Water Flow (gpm)</b>	0.022	0.044	0.088	0.176
<b>Dried Air flow (SCFM)</b>	0.06	0.06	0.31	0.63
<b>Dimensions (ft) W x L x H</b>	4.6 x 6.9 x 7.2	4.6 x 6.9 x 7.2	5.2 x 6.9 x 7.2	5.2 x 6.9 x 7.2

<b>Air to Treat (Nm<sup>3</sup>/h)</b>	<b>5,000</b>	<b>10,000</b>	<b>15,000</b>	<b>20,000</b>
<b>Air to Treat (SCFM)</b>	<b>3,125</b>	<b>6,250</b>	<b>9,375</b>	<b>12,500</b>
<b>O<sub>3</sub> Required (lb/day)</b>	2.11	4.23	6.34	8.46
<b>O<sub>3</sub> Generator Power (kW)</b>	0.03	0.06	0.12	0.25
<b>Total Power (kW)</b>	0.9	1.2	2.8	3.6
<b>Compressed Air (SCFM)</b>	3.1	6.3	9.4	12.5
<b>Blower Power (kW)</b>	.5	.75	1.5	2.2
<b>Recycle Pump Flow (gpm)</b>	44	88	132	176
<b>Recycle Pump Power (kW)</b>	0.3	0.3	1.1	1.1
<b>Cooling Water Flow (gpm)</b>	0.35	0.70	1.06	1.41
<b>Dried Air flow (SCFM)</b>	1.25	2.50	3.75	5.00
<b>Dimensions (ft)</b>	6.6 x 18 x 7.2	6.6 x 18 x 7.2	7.5 x 18 x 7.2	7.5 x 18 x 7.2

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The DESOZONE system maintains control by monitoring water levels in the storage basins, pH and ORP of the scrubbing solutions and the emissions of ozone, hydrogen sulfide and ammonia in the stack. Based on these inputs, additional water, acid and sodium hydroxide are added. Ozone feed is either increased or decreased to match the demand of the system.

Chemical usage rates for both acid and base are typically 40-60 gm (100% basis) per 1000 N m<sup>3</sup>/hr of air to be treated (0.09-0.13 lbs per 630 SCFM). These figures assume hydrogen sulfide levels of less than 10 ppm.



## Process Flow Sheet for DESOZONE Single Stage Scrubbing System

## **Specifications**

### **Ozone Generator**

Dosage	.21 mg/SCF of air
Design temperature	86 ° F
Operating frequency	820 Hz
Operating voltage, max	3-9 kV

Cooling water	
Temperature in/out	59/68 ° F
Operating pressure	14.7 psi

### **Compressor (Typically Excluded From Our Supply)**

Type Oil Free

### **Air Filters**

Coalescent and Carbon

### **Electrical**

380 V, 3 Phase, 60 Hz

### **Air Drier**

Type	micro porous
Design pressure	147 psi
Actual Pressure	103 psi
Design temperature	86 ° F
Dew point (at 1 bar)	-76 ° F

### **Sodium Hydroxide**

Caustic Soda concentration	40%
Dosing pump capacity	0.009 to 0.009 gpm Type 200 to 2500 0.018 to 0.18 gpm Type 5000 to 20000
Storage tank	13 gallons Type 200 to 2500 26 gallons Type 5000 to 20000

### **Ozone Mixer and Residual Ozone Destroyer**

Power required                      100 W Type 200 to 2500  
   500 W Type 5000 to 20000

### **Scrubber**

Type                                      Horizontal  
Material                                PP  
Packing                                 Pall/Raschig  
Head loss                              3.94 inches water column  
W x L x H (ft)                        1.6 x 4.6 x 5.2 – 2.6 x 5.2 x 5.2 (Type 200 to 2500)  
W x L x H (ft)                        4.3 x 15 x 7.2 to 5.6 x 15 x 7.2 (Type 5000 to 20000)

Complete with internal demister, service piping, valves, bottom tank, drainage, man-hole, level switches.

### **Blower**

Head                                      6.7 inches water column  
Material                                PP  
RPM                                       2850  
Noise                                    85 dB at 6.6 ft  
Protection                             IP 55  
Transmission                         Direct

### **Recycle Pump**

Head                                      32.8 ft water column  
Material                                PP  
Protection                             IP 55  
RPM                                       2900

Complete with valves, filter and service piping, manometer.

### **Ambient Conditions**

Temperature                            <95 degrees C  
Relative Humidity                      <80%