Electrochemical

OZONE GENERATOR
The Superior Technology for Ozone Generation

- Generates One Pound of Ozone Per Day
- Ozone Generated From Water
- High Purity Ozone Stream
- Generates and Delivers Ozone Under Pressure
- High Concentration Ozone Gas; 12 wt% to 14 wt%

Model 124
Features and Benefits of Electrochemical Ozone Generation

- High purity ozone – Free from NOx or particulate matter
- Water serves as the source of oxygen – therefore eliminating the air drying, oxygen enrichment, and oxygen supply associated with corona systems
- Delivery of the ozone at a higher concentration permits new levels of reaction kinetics
- Ozone generation and delivery at room temperature minimizes thermal degradation
- Self-pressurization permits direct injection – no venturi systems or compressors are required for engagement of the ozone
- Combination of higher pressure and increased concentration permits new treatment approaches
- Electrical power and water are the only system consumables
- Fully automated, turnkey systems include self-testing and safety monitoring

Comparison of Ozone Production Methods

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Air Fed Corona Discharge</th>
<th>Electrochemical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impurities in ozone gas stream</td>
<td>NOx and particulate matter</td>
<td>None</td>
</tr>
<tr>
<td>Concentration of ozone gas</td>
<td>2 weight %</td>
<td>10-18 weight %</td>
</tr>
<tr>
<td>Delivered pressure</td>
<td>Atmospheric</td>
<td>Self pressurizing</td>
</tr>
<tr>
<td>Air preparation</td>
<td>-60°C Dew Point</td>
<td>None</td>
</tr>
</tbody>
</table>

Typical Applications for Ozone

* Aquaculture
* Pulp and paper bleaching
* Medical sterilization
* Deionized water supplies
* Aquariums and water parks
* Semiconductor processing
* Chemicals and manufacture
* Beverage processing
* Food Processing
* Cooling towers

* Container sterilization
* Biofouling control
* BOD control
* Swimming pools
* Groundwater treatment
* Waste treatment
* Laundry washing
* Potable water
* Odor control
* Accelerated aging systems
Electrolysis reactions occur at the interface between the porous anode and the proton-exchange membrane. Protons are conducted through the proton-exchange membrane.

Water is oxidized to form ozone ($O_3$) and oxygen ($O_2$) gas. Protons ($H^+$) are also formed during the reaction.

The electrochemical ozone generator may be divided into five sub-systems. The primary sub-system is the electrolyzer stack itself where the ozone gas is generated. The other sub-systems only serve to control the operation of the unit and to provide power, cooling, and water to the electrolyzer stack. Physically, the system is arranged to separate the fluid systems, gas and water, from the electrical systems. To accomplish this in a single cabinet, all fluid-containing components are housed in a polypropylene cabinet. Within this cabinet are the electrolyzer, recirculation pump, heat exchanger, and water reservoirs. This cabinet, and the components within it, are shown below.
**SPECIFICATIONS:**  

**MODEL 124 OZONE GENERATOR**

**Ozone Generation**
- **Output:** 1 pound per day at 100% duty cycle
- **Concentration:** 12-1555 wt% wt nominal
- **Output pressure:** 0-20 psig (standard models)
- **Output stream contents:** Ozone, oxygen, water vapor
- **Total O$_2$/O$_3$ gas output:** 1.5 liters per minute
- **Gas outlet:** ¼” Teflon tubing

**DI Water Requirements**
- **Water quality:** Greater than 5 MΩ·cm
- **Water consumption:** 1 gallon per day
- **Water pressure:** 50 psig
- **Water inlet:** ¼” tubing

**Electrical Requirements**
- **Voltage:** 208/220 Volts 1Ø (Standard Input)
- **Frequency:** 60 Hz (50 Hz optional)
- **Circuit rating:** 6.5 kVA (30 Amp circuit @ 208 Volts)
- **Receptacle:** NEMA L6-30

**Venting Requirements**
- **Quantity-size:** Two individual vents; each ¼” tubing minimum
- **Vent material:** One vent must be compatible with H$_2$ gas; the second vent must be compatible with O$_3$ gas.

**Clearance Requirement**
- **Operation:** Back: 6”, Front: 12”, RH: 12”, LH: 12”
- **Full access:** Back: 24”, Front: 24”, RH: 24”, LH: 24”

**Physical**
- **Dimensions:** 32” high; 25” wide; 29” deep
- **System weight:** 250 pounds
- **Casters:** 3” swiveling
- **Operating environment:** 32° to 90° Fahrenheit; 85% RH
- **Cabinet rating:** NEMA 2 (Indoor-drip proof)

**Heat Rejection**
- **Warm air rejection:** Warm air exits the front of the cabinet; outdoor heat rejection optional.

**Additional Equipment Requirements**
- **Required for operation:** Deionized water resin beds (available locally)
- **Optional:** Contact manufacturer for complete list

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For sales, literature, or technical information regarding Lynntech’s series of electrochemical ozone generation systems, please contact:

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