HTU-500 Ozone Generator

Installation and Operation Manual

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Cautions, Warnings and Hazards

Refer to the manual of the ozone generating system first, to assure proper location of all ozone equipment.

Ozone is a powerful oxidizing agent. Observe strict operating procedures when using ozone equipment.

Ensure that the ozone generator is in a well-ventilated area. Do not allow rain or condensation to contact the ozone generator. The ozone generator must be operated indoors or in an enclosure non-condensing environment.

Note: If the operator has asthma, he/she must not enter an ozonated airspace. Ozone can induce an asthma attack.

Carefully review and familiarize yourself with the following important safety information statements concerning the use of ozone with the HTU Generator.

WARNING Ozone is an extremely aggressive and powerful oxidizer. The Occupational Safety and Health Administration (OSHA) 8-hour exposure limit is 0.10-PPM. The OSHA 15-minute exposure limit for ozone is 0.3 PPM. Above 0.3 PPM, there is the risk of damage to respiratory tissues.

WARNING People who have no sense of smell should not operate this equipment.

WARNING **Never** attempt to verify ozone production by directly breathing or smelling the ozone outlet or an ozone-tubing outlet.

WARNING The HTU uses ozone compatible tubing to plumb high concentration ozone gas under pressure in some places. These tubes under high pressures pose a possibility of leaks to occur. In the event water does leak from the HTU Generator, shut all equipment off and repair immediately to prevent electric shock.

WARNING Make sure all tubing connections between the ozone generator and the injection point are secure and in good working condition. Failure to do so could result in the discharge of undesired ozone into an occupied space.

Introduction

The HTU-500 Ozone Generator produces ozone from air or oxygen using corona discharge technology. A double quartz dielectric corona cell is used for ozone production and is the heart of the ozone generator. The corona (spark) inside the ozone generator passes through two dielectric barriers between the anode and cathode in the corona cell. This ensures the oxygen and ozone gas pass through a pure quartz sleeve and never come in contact with the actual stainless steel anode or cathode materials.

Oxygen or dry air can be used for ozone production.

Installation

Notes: Ensure the HTU-500 is mounted in a clean, dry location. The HTU-500 ozone generator is not rated for wash-down, or outdoor environments. Also, as the HTU-500 is air cooled ensure ambient temperatures do not rise above 95-deg F.

Mounting

Choose a well ventilated area for ozone generation installation.

Mount the HTU-500 ozone generator on a suitable wall using the slotted holes located on the back of the enclosure.

If wall mounting is not available, it is acceptable to operate the HTU-500 in a horizontal location as a bench-mount unit.

Plumbing Connections

The HTU-500 is equipped with 1/8" Female NPT connections on the bottom of the unit for both feed gas IN, and ozone OUT. Supplied with the HTU-500 are Kynar barbed fittings that will thread into this connections and adapt to 1/4" barbed connections.

Oxygen Inlet: connect oxygen inlet via oxygen compatible tubing. Flexible tubing such as polyethylene or Teflon tubing can be used with the 1/4" barbed fitting. Use 1/4" ID tubing to create this connection. (oxygen or dry air can be used as a feed-gas for this ozone generator)

Oxygen Outlet: connect ozone outlet via Teflon tubing using the 1/4" barbed fitting. Use 1/4" ID x 3/8" OD Teflon tubing to create this connection. Stainless steel tubing can also be used with the 1/8" Female NPT connection.

Electrical Connections

A 120 VAC power cord is supplied with the HTU-500 ozone generator. Power the HTU-500 with any standard 120 VAC electrical connection.

HTU-500 Ozone Generator Operation

Operation on Dry Air Feed-gas

The HTU-500 can be operated in with a **vacuum driven air dryer** available from Oxidation Technologies. This will allow a venturi to pull ozone directly from the ozone generator and air dryer under a vacuum.

When Dry Air feed-gas is used for ozone production from the HTU-500 follow the guidelines listed below.

- Maximum operational vacuum = -5 PSI
- Maximum dry air flow = 10 LPM
- Minimum dry air flow = 0 LPM

The air dryer must be under power 24 hrs./day. If power is interrupted, and restored only after 2-20 minutes, there is about 20% chance that steam may enter the air supply line.

Back-flow prevention devices must be in place between the ozone generator and ozone venturi. We suggest the use of a Balance Barometer and check valve to ensure reliable and safe operation.

The ozone generator can be left in the ON position at all times along with the air dryer. At any time air flows through the ozone generator the ozone generator is ready for operation at all times.

Dry air from a compressed air source can also be used when required. Follow the same requirements and operational criteria as the oxygen operation section below.

Operation on Oxygen feed-gas

Ensure oxygen flow is present and pure prior to turning ON the ozone generator.

Under normal operation turn ozone generator OFF and purge oxygen through the ozone generator for at least 5 seconds prior to ceasing oxygen flow to properly purge the ozone generator.

Operation on Oxygen Feed-gas

When oxygen feed-gas is used for ozone production from the HTU-500 follow the guidelines listed below.

- Maximum oxygen pressure = 10 PSI
- Maximum operating pressure = 5 PSI
- Maximum oxygen flow = 10 LPM
- Minimum oxygen flow = 0 LPM

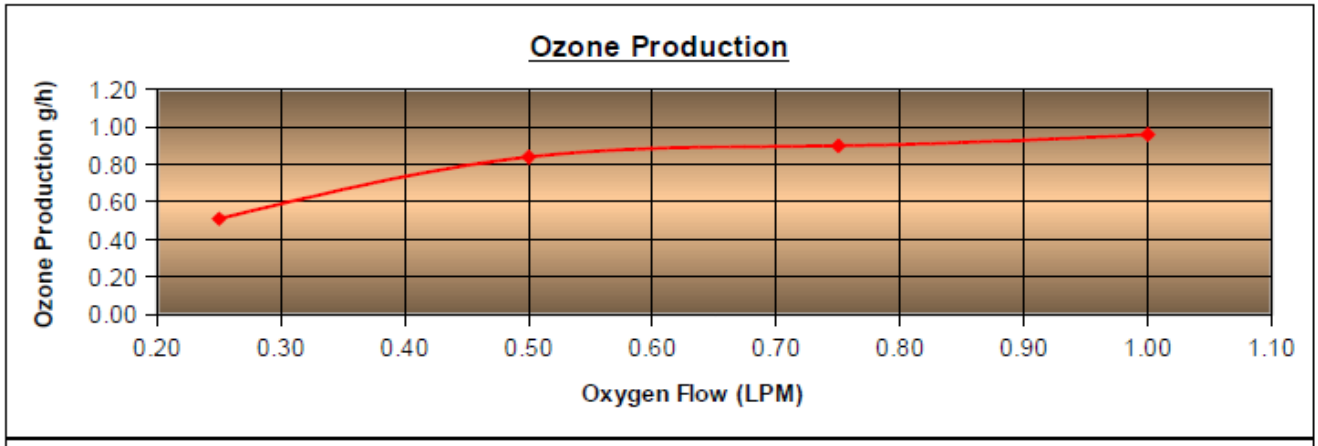
Ensure oxygen flow is present and pure prior to turning ON the ozone generator.

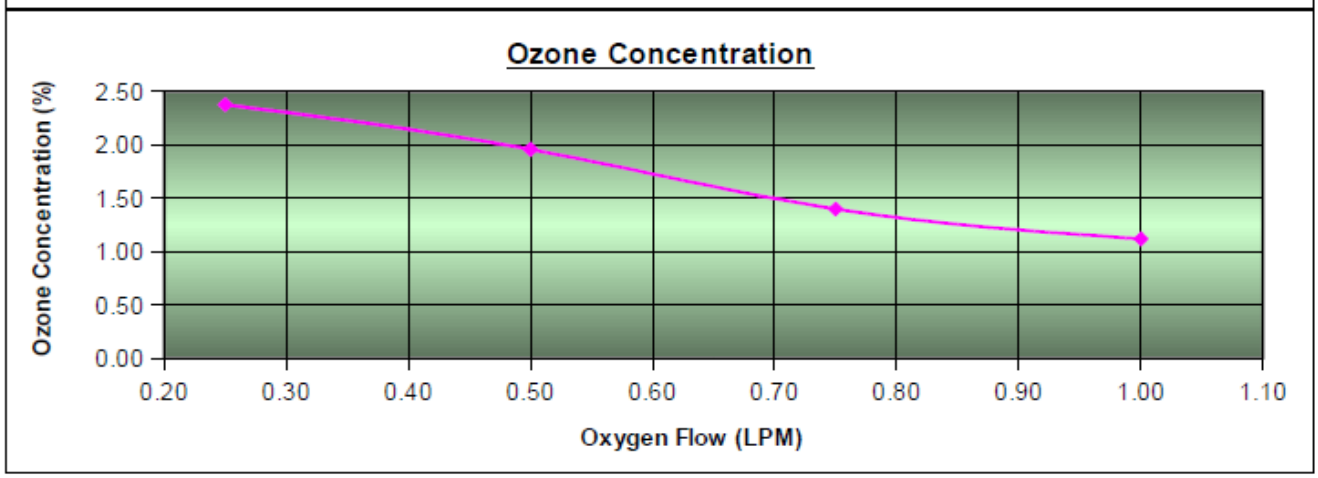
Under normal operation turn ozone generator OFF and purge oxygen through the ozone generator for at least 5 seconds prior to ceasing oxygen flow to properly purge the ozone generator.

Ozone production on oxygen is shown on the chart on the next page.

OZONE GENERATOR PERFORMANCE TEST

Model: HTU-500
Feed Gas : Oxygen
Rated Ozone Output = 1 g/hr
Max Ozone Production = 1 g/hr
Max Ozone Concentration = 2.4% @ 0.25 LPM





Air FLOW (SLPM) 90-92% O2	Oxygen Pressure (PSIG)	OZONE CONC. (g/Nm³)	OZONE PRODUCTION (g/h)	OZONE CONC. (%W-W)	COMMENT
0.25	5.00	34.00	0.51	2.38	
0.50	5.00	28.00	0.84	1.96	
0.75	5.00	20.00	0.90	1.40	
1.00	5.00	16.00	0.96	1.12	

Operation with internal air pump

The HTU-500 can be equipped with an internal air pump to supply air flow through the ozone generator.

Ensure a vacuum driven air dryer is used on the inlet of the ozone generator to prevent damage to the corona cell due to moisture build-up.

The ozone generator corona cell and air pump will start simultaneously. Ensure the ozone outlet is plumbed to a safe location prior to turning ON the ozone generator.

If the ozone generator will be bubbling ozone into water, ensure adequate back-flow prevention devices are used to prevent the back-flow of water into the corona cell of the ozone generator.

HTU-500 Maintenance

The HTU-500 has no consumables or replaceable parts inside. Provided no moisture, dust or other contamination enters the ozone generation cell there will be no maintenance required to the ozone generator.

In the event the ozone generator corona cell is contaminated the ozone generator will cease to produce ozone. It will be necessary to call for service by a qualified technician at this time.

Monthly:

Check tubing for leaks, cracks or other degredation. Replace all suspect tubing

Check oxygen purity, or air dew-point to ensure quality feed-gas is used at all times

Check water level in balance barometer (if applicable)

Every 6-months:

Replace check valves on ozone outlet

Annually:

Disconnect the ozone generator from power and check for excessive dust inside. With long hair brush and vacuum cleaner gently sweep all dust away.

How to Contact Oxidation technologies

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