Ozonation Pilot Plant

- Automatic pressure and temperature compensation allows direct entry of ozone dosage in mg/L in manual mode
- Maintains dissolved ozone concentration setpoint in auto mode
- Automatic calculation of ozone transfer efficiency and applied dosage
- Integrated oxygen generation system
- Ambient ozone concentration transmitter for ozone leak detection and automatic shutdown
- Feed pump with automatic flow control
- Chemical feed systems configurable for flow-pacing, closed-loop PID, or trim control
- Chemical feed pump configurable as a composite sampler
- Twenty-five equally-spaced sampling ports in contactor for decay analysis
- Influent piping weir eliminates need for feed tank
- All equipment integrated onto one skid for plug-and-play operation
- Designed for automatic un-manned operation
- Monitored and controlled remotely via wireless cellular connection
- Data logging to formatted text file for importing into spreadsheet and charting applications
- Historical and real-time trending visualization tool
- Alarm notification via email or text messaging
- IoT network of sensors provides exceptional diagnostic information
Simple Operation of ozone water treatment systems can be complex but our automatic control system makes it simple. In manual mode the dosage is entered directly in mg/L, eliminating the need for complex pressure, temperature, and concentration calculations. In auto mode the controller will vary the dosage to maintain a dissolved ozone concentration setpoint. The resulting transfer efficiency is calculated and displayed on the operator interface.

Safe Most people can smell an ozone leak before it reaches a dangerous level, but the automatic control system includes an ambient ozone concentration analyzer that is used to shut down the ozone generator if a leak is detected. If the module is installed in an Intuitech Pilot Enclosure the automatic control system will run the ventilation system at maximum capacity until the ozone concentration is reduced to a safe level.

Reliable The ozone gas system consists of an oxygen generation panel and an ozone generation panel. The oxygen generation panel includes a compressor, heat exchanger, particle filter, air dryer, and oxygen concentrator. The ozone generation panel consists of an ozone generator, particle filters, ozone concentration analyzer with automatic zeroing, and a pressure and temperature compensated mass flow controller. Both panels are monitored with an extensive network of diagnostic sensors including temperature, pressure, humidity, and oxygen concentration. This information is used for predictive maintenance to ensure reliability.
Inlet, 1½” MPT

1. Fine Bubble Diffuser
2. Contactor
3. Ozone Destruct Unit
4. Contactor Sample Pump
5. Dissolved Ozone Transmitter

Ambient Ozone Transmitter

6. Ambient Ozone Transmitter
7. Chemical Feed System 1
8. Chemical Feed System 2
9. Status Beacon
10. Inlet, 1½” MPT
11. Outlet, 2” MPT
12. Drain Waste, 2” MPT

Oxygen Panel

20. Oxygen Panel
21. Ozone Panel
22. Operator Interface
23. Folding Shelf
24. Control Panel
25. Air Conditioner
26. Power Transformer
27. Feed Pump

Dimensions: inch [mm]
Data Logging

The following parameters are automatically collected and stored for analysis. The collection is performed at a user-specified frequency from once per second to once per twelve hours. The values are time and data stamped and simultaneously written to a formatted text file on a removable flash drive and to a backup file on the internal solid state drive. These files can be transferred by removing the flash drive or using file transfer protocol over a remote connection.

- Contactor Water Flow
- Contactor Dissolved Ozone Concentration
- Contactor Off-Gas Ozone Concentration
- Diffuser Ozone Flow
- Diffuser Ozone Pressure
- Air Compressor Inlet Pressure
- Air Compressor Outlet Pressure
- Air Compressor Outlet Temperature
- Ambient Ozone Concentration
- Oxygen Concentrator Inlet Pressure
- Oxygen Concentrator Inlet Dewpoint
- Ozone Generator Inlet Oxygen Concentration
- Ozone Generator Pre-filter Inlet Pressure
- Ozone Generator Pre-filter Outlet Pressure
- Ozone Generator Post-filter Inlet Pressure
- Ozone Generator Post-filter Outlet Pressure
- Air Dryer Inlet Pressure
- Chemical 1 Dosage
- Chemical 1 Flow
- Chemical 1 Tank Level
- Chemical 2 Dosage
- Chemical 2 Flow
- Chemical 2 Tank Level
- System Diagnostic Data

Remote Operation

The pilot module is designed for fully automatic unmanned operation and can be monitored and controlled remotely. A wireless cellular router is installed in the control panel. This device can provide remote access to the pilot module in locations where adequate cellular data service is available. The router can be configured for the Verizon or AT&T networks depending on which network has the best service at the installed location. Data service is included during the warranty period. Data service beyond the warranty period can be purchased from Intuitech in one year blocks. Any task normally performed using the operator interface can also be performed remotely using a laptop computer, tablet, or smartphone. The operator interface can also be configured to send alarm notifications via email or text messaging.

Ordering

Our standard Ozonation Pilot Module can be configured as shown below. It can also be customized to meet specific requirements for an additional cost. Please contact Intuitech for more information.

ZPCGOS_ TM_DO_PH_CF

Options:
- RPS (reusable packaging system)
- UPS (uninterruptible DC power supply)
- SIU (SI units)
- PSC (plant SCADA connection)
- SAI (spare analog input module)

Number of Chemical Feed Systems: 0, 1, 2, 3
Number of pH Transmitters: 0, 1, 2, 3, 4
Number of Dissolved Ozone Transmitters: 1, 2, 3, 4
Ozone Source: 0 (None), 1 (Dual CG Cylinders), 2 (Oxygen Generator)
Feed Pump Capacity: 12 (2.0...12 gpm)
Contactor Configuration: 1 (6 feet high, 130 gallons), 2 (15 feet high, 130 gallons)
Number of Trains: 1, 2