

Watertec Engineering Pty Ltd

Information Sheet

Ozgen Ozonator Specifications

Make:	<i>Ozgen</i>
Manufacturer:	Watertec Engineering Pty. Ltd.
Place of Manufacture:	Beenleigh, Queensland, Australia
Ozonator Type:	Silent arc, Corona Discharge
Ozone Concentration:	1.7% w/w on air → Both dependent on conditions. 6% w/w on oxygen
Generation Technology:	Medium Frequency
Output Variation:	0 - 100% of rated output by frequency and voltage control
High Voltage:	9.5kV Maximum
Automation:	Via 4-20mA signal and PID controller
Ozonator Control:	PLC
Power Consumption:	23w/g on air feed vacuum (@ 1.7% w/w O ₃) @ -0.5m Vacuum 18w/g on air feed pressure 12w/g on oxygen feed (@ 6% w/w O ₃) @80kPa

TECHNICAL DATA

Power:	Main Voltage: 110-500V, 1 phase and 3 phase Frequency: 50/60Hz
Protection Class:	IP52 optional protection to IP55 available
Site Conditions:	Maximum altitude: 2500m Ambient Temperature: Minimum 5°C Maximum 40°C Average over 24 hours: 35°C
Ozonator Materials:	Enclosure: Powder Coated Steel Enclosure colour: "B25" to AS2700 (Light Blue) Water and Gas Piping: Chem Resistant, Grey PVC, Nickel Plated Brass, 304/316 Stainless Steel, Teflon.
Generation Cell:	PVC Cell: Vertical tube, water cooled PVC Cell Materials: PVC, Polycarbonate, Stainless Steel, Glass, & Teflon. Seals: Viton, Teflon/Viton. Stainless Steel : Vertical tube, Water Cooled Stainless Steel Cell Materials: Stainless Steel, Glass, and Teflon. Seals: Teflon, Viton/Teflon.

Feed Gas Requirements:

Feed Gas Pressure: (For pressure systems) Minimum 1 bar for Oxygen and 4 Bar for Dry Air, Maximum 10 bar
Vacuum Systems: -0.05 to -0.1kPa
Gas Quality: Minimum Pressure Dew Point -60°C filtered to 1 micron before the ozonator.
Oxygen Purity: Minimum 90% Maximum 98%

Cooling Water Requirements:

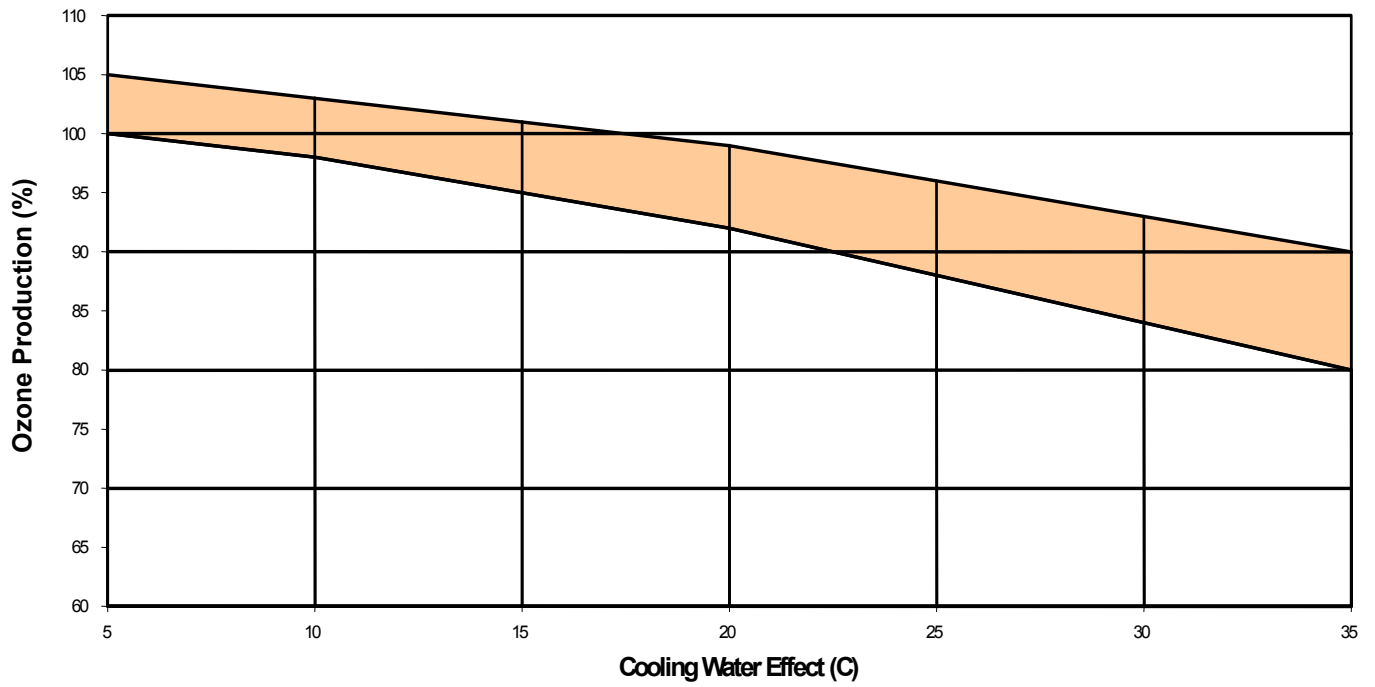
The ozone generator requires a cooling water supply (normally mains water) which should comply with the following specifications: -

- i) Minimum Pressure: 2 bar
- ii) Maximum Pressure: 10 bar
- iii) Maximum Temperature: 30°C **
- iv) Minimum Temperature: 5°C *
- v) Maximum Iron Content (Fe): 0.3mg/l
- vi) Maximum Manganese Content (Mn): 0.1mg/l
- vii) Minimum pH: 6.5
- viii) Maximum Chloride Content (C): 500mg/l
- ix) Cooling Water Requirements: 1.5 m³/h (@ 20°) /1.0kg/h of ozone
- x) Filtered to 10 micron
- xi) Conductivity > 75ns

* If the ambient dew point is higher than the cooling water temperature, then condensation will form on the ozonator cell. We recommend that air-conditioning be fitted if the ambient temperature is 5°C higher than the cooling water.

*Generator output will be reduced for cooling water temperature above 12°C – For more detail on Cooling Water Flow Requirements and Water Chillers see Information Sheet on Cooling Water Requirements.

Cooling Water vs Ozone Output



Ozgen C & E Series Ozonator Specifications

Ozone Generator Model	WT 10C	WT 20C	WT 30C	WT 60E	WT 100E	WT 200E	WT 300E	WT 400E
Ozone Output (gO ₃ /h) at 1.7% w/w on Air	10	20	30	60	100	200	300	400
Gas Flow Dry Air m ³ /hr	.5	1	1.5	3	5	10	15	20
Ozone Output (gO ₃ /h) at 6% w/w on Oxygen	20	40	60	120	200	400	600	800
Gas Flow O ₂ m ³ /hr	.252	.5	.755	1.51	2.52	5.0	7.56	10.0
Cooling Water Flow at 20°C (l/h)	30	30	45	90	150	300	450	600
Ozone Generator Cells (No.)	1	1	1	1	1	2	3	4
Water Inlet & Outlet Connection	½" BSPF	½" BSPF	½" BSPF	½" BSPF	½" BSPF	½" BSPF	¾" BSPF	¾" BSPF
Air / O ₂ Inlet Connection	½" BSPF	½" BSPF	½" BSPF	½" BSPF	½" BSPF	½" BSPF	¾" BSPF	¾" BSPF
Ozone Outlet Connection	½" BSPF	½" BSPF	½" BSPF	½" BSPF	½" BSPF	½" BSPF	¾" BSPF	¾" BSPF
Dimensions (mm) Width Depth Height	820 420 1150	820 420 1150	820 420 1150	915 600 1800	919 600 1800	1125 600 1800	1560 700 1800	1560 700 1800

Ozone output is measured with cooling water temperature of 12°C

POWER REQUIREMENTS FOR OZGEN OZONE C & E SERIES GENERATOR

Ozone Generator Model	W/G	WT 10C	WT 20C	WT 30C	WT 60E	WT 100E	WT 200E	WT 300E	WT 400E
Vacuum Air kW	21	0.23	0.42	0.63	1.26	2.1	4.2	6.3	8.4
Vacuum Oxygen kW	14	0.14	0.28	0.42	0.84	1.4	2.8	4.2	5.6
Pressure Air kW	18	0.18	0.36	0.54	1.08	1.8	3.6	5.4	7.2
Pressure Oxygen kW	12.5	0.125	0.25	0.375	0.75	1.25	2.5	3.75	5.0

POWER REQUIREMENTS FOR OZGEN OZONE AR SERIES GENERATOR

Ozone Generator Model	W/G	WT200 AR	WT400 AR	WT600 AR	WT800 AR	WT1000 AR	WT1200 AR	WT1500A R
Vacuum Air kW	21	4.2	8.4	12.6	16.8	21	25.2	31.5
Vacuum Oxygen kW	14	2.8	5.6	8.4	11.2	14	16.8	21
Pressure Air kW	18	3.6	7.2	10.8	14.4	18	21.6	27
Pressure Oxygen kW	12.5	2.5	5.0	7.5	10.0	12.5	15	18.75

OZGEN AR SERIES OZONATOR SPECIFICATIONS

	WT200	WT400	WT600	WT800	WT1000	WT1200	WT1500
Ozone Generator Model	AR	AR	AR	AR	AR	AR	AR
Ozone Output (gO₃/h) at 1.7% w/w on Air	200	400	600	800	1000	1200	1500
Gas Flow Dry Air m³/hr	10	20	30	40	50	60	75
Ozone Output (gO₃/h) at 6% w/w on Oxygen	400	800	1200	1600	2000	2400	3000
Gas Flow O₂ m³/hr	5	10	15.12	20.1	25.2	30.2	37.8
Cooling Water Flow at 20°C (l/h)	300	450	600	1150	1450	1720	2300
Ozone Generator Cells (No.)	2	4	6	8	10	12	15
Water Inlet & Outlet Connections	½" BSPF	¾" BSPF	¾" BSPF	1" BSPF	1" BSPF	1" BSPF	1½" BSPF
Air / O₂ Inlet Connection	½" BSPF	¾" BSPF	¾" BSPF	1" BSPF	1" BSPF	1" BSPF	1½" BSPF
Ozone Outlet Connection	½" BSPF	¾" BSPF	¾" BSPF	1" BSPF	1" BSPF	1¼" Flange	2" Flange
Dimensions Electrical Module							
Width (mm)	700	700	700	700	700	700	700
Depth (mm)	425	425	425	425	425	425	425
Height (mm)	1875	1875	1875	1875	1875	1875	1875
Dimensions H.V. Module							
Width (mm)			800	800	800	800	1000
Depth (mm)			700	700	700	700	700
Height (mm)			1875	1875	1875	1875	1875
Dimensions Generation Module							
Width (mm)	1475	1750	1375	1650	1925	2200	2615
Depth (mm)	700	700	700	700	700	700	700
Height (mm)	1875	1875	1875	1875	1925	1925	1925

Ozone output is measured with cooling water temperature of 12°C

ALARMS

The following safety features and alarms are provided with the *Ozgen* ozonators.

Alarm lights are provided on the electrical panel of the 'C' and 'E' Series ozonators, however the 'AR' Series has a diagrammatic mimic panel on which all alarms are individually indicated.

The following alarms are provided with *Ozgen* ozonators.

Description	C Series Pressure	C Series Vacuum	E Series Pressure	E Series Vacuum	AR Series Pressure	AR Series Vacuum
Low Cooling Water Flow			X	X	X	X
High Cooling Water Temperature	X	X	X	X	X	X
High Cooling Water Pressure	X	X	X	X	X	X
Low Air Flow	X	X	X		X	X
High Air Flow					X	X
High Air Temperature					A	A
High Air Pressure	X		X		X	
Ozone Gas Leak (Not Displayed)	A	A	A	A	A	A
Generation Cell Leak Detector	X	X	X	X	X	X
High Air Dew Point	B	B	B	B	B	B
High Transformer Temperature	X	X	X	X	X	X
Power Controller Fault <ul style="list-style-type: none"> • High Voltage Over Current • Low Supply Voltage • Frequency Controller High Temperature 	X	X	X	X	X	X
Compressor Overload					A	A
Ozone Injector Pump Overload					A	A
General Alarm Output	X	X	X	X	X	X

X = STD Equipment

A = Option

B = PLC input

These alarms are split up into low and high priority alarms, whereby appropriate action is taken by the PLC. High priority alarms, such as "ozone gas leak", immediately shut down the entire ozonation system, whereby lower priority alarms, such as "low cooling water flow", have a 60 second delay.

LAMP INDICATORS

The following lamp indicators are provided with *Ozgen* ozonators.

Description	C Series Pressure	C Series Vacuum	E Series Pressure	E Series Vacuum	AR Series Pressure	AR Series Vacuum
Cooling Water Fault	X	X	X	X	X	X
High Cooling Water Temp.			X	X	X	X
High Cooling Water Pressure					X	X
Low Air Fault	X	X	X	X	X	X
High Air Flow					X	X
High Air Temperature				A	A	A
High Air Pressure				X	X	X
Ozone Gas Leak	A	A	A	A	A	A
Generation Cell Leak Detector	X	X	X	X	X	X
High Air Dew Point			A	A	A	A
High Transformer Temperature					X	X
High Voltage Over Current					X	X
Compressor Overload					X	X
Ozone Injector Pump Overload					X	X
General High Voltage Fault	X	X	X	X		
Air Dryer Fault				X		

X = STD Equipment

A = Option

B = PLC input

FLOW INDICATORS – SWITCHES

The following meter/gauge/flow indicator and switches are provided with *Ozgen* ozonators.

Description	C Series Pressure	C Series Vacuum	E Series Pressure	E Series Vacuum	AR Series Pressure	AR Series Vacuum
Ozone Mode Switch	X	X	X	X	X	X
Ozone Generator Switch	X	X	X	X	X	X
Lamp Test Button	X	X	X	X	X	X
Output Meter	X	X	X	X	X	X
Manual Output Ozone Control	X	X	X	X	X	X
Process Controller (Auto 2 Model Only)	X	X	X	X	X	X
Air Rotameter	X	X	X	X	X	X
Water Rotameter			X	X	X	X
Volt Meter	X	X	X	X	X	X
Air Pressure Gauge	X	X	X	X	X	X
Hour Meter			X	X	X	X



WATERTEC

Engineering Pty Ltd

Australia

Watertec Engineering Pty. Ltd
 Tel: +61-(0)7-3287-1288
 Fax: +61-(0)7-3287-2800
 Web: www.watertecengineering.com
 Email: sales@watertecengineering.com

Malaysia

Waterotec (M) Sdn Bhd
 Tel: + 603 6092 9029
 Fax: + 603 6092 9025
 Web: www.watertecengineering.com
 Email: sales@waterotec.com