

# AX8580

## Fully Integrated Modular Ozone Delivery System



The AX8580 Ozone Delivery System generates and delivers high flow, high concentration, ultra clean ozone for advanced thin film applications. The AX8580 is specifically designed for use with an increasing number of semiconductor process applications such as ALD, CVD and TEOS/Ozone CVD. This standalone, fully integrated modular ozone system can be equipped with up to (4) AX8415 generators and configured as a multi-channel

system to deliver ozone for up to 4 channels, supporting multiple chambers or multiple tools. Flow rates of up to 50 slm per channel and concentrations greater than 400 g/Nm<sup>3</sup> are achievable at peak system configuration. Also offered is an optional in-rack chiller for ultra high concentrations and extended generator lifetime.

### Product Features

- Fully integrated, modular system equipped with up to (4) AX8415 generators for the highest concentration at the highest flow
- Highest ozone concentrations >400g/Nm<sup>3</sup> at the highest flow rates for improved thin film quality
- Compatible with or without nitrogen for ultra clean ozone
- Optional integrated ozone destruct for protection from unintended ozone exposure



### Key Benefits

- Individually controlled generator outputs support up to (4) channels or combined into a single channel chamber process tool
- Improved operating performance and extended lifetime due to cooling improvements and optional in-rack chiller

Ozone has many advantages over other oxidizers as a strong oxidizing agent. Ozone has a high redox potential, can be generated at the point-of-use, and it decays naturally into oxygen ( $2\text{O}_3 \Rightarrow 3\text{O}_2$ ). Therefore, it is considered a "green" chemical. If required, ozone can also be destroyed at the output of the process chamber using a catalytic or thermal destruct unit. This significantly lowers the chemical disposal cost, as the output is oxygen and contains no ozone. Ozone is very stable at room temperature, making it a good choice for most applications. Typical ozone applications include atomic layer deposition (ALD), chemical vapor deposition (CVD), photoresist strip, wafer cleaning, contaminant removal, surface conditioning, and oxide growth.

The AX8580 system is configurable with up to four (4) independent channels to support multiple tools or chambers concurrently. Each channel can be matched to the specific concentration and flow required for your specific process. For ultra high concentration processes the system can be configured for up to two (2) channels with an in-rack chiller and maintaining the same footprint.

The ozone source for each channel is the production-proven AX8415 ozone generators, featuring field-proven, high concentration, ultra clean ozone generation technology from MKS. The AX8580 includes all subassemblies required for stand-alone operation, including power distribution, an ambient ozone safety monitor, and status indicator panel.

For ozone performance of each output channel, refer to Figures 1 and 2.

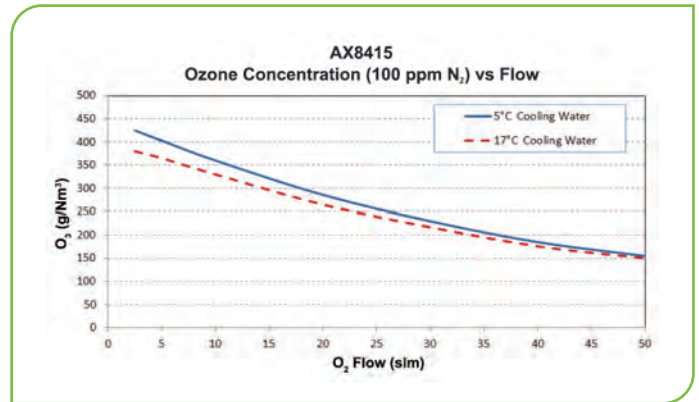


Figure 1 - AX8415 Ozone Generator Performance Graph (Single Generator)

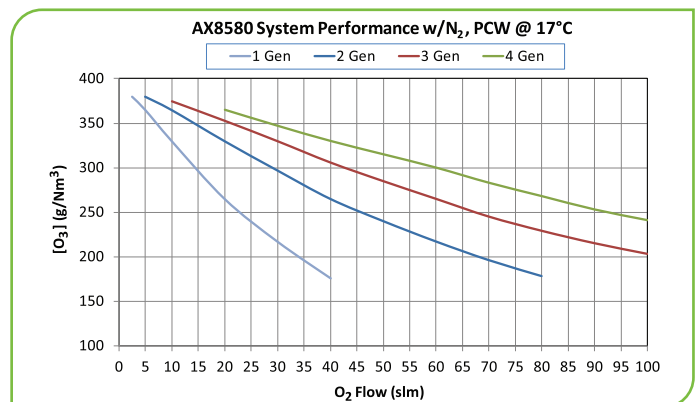
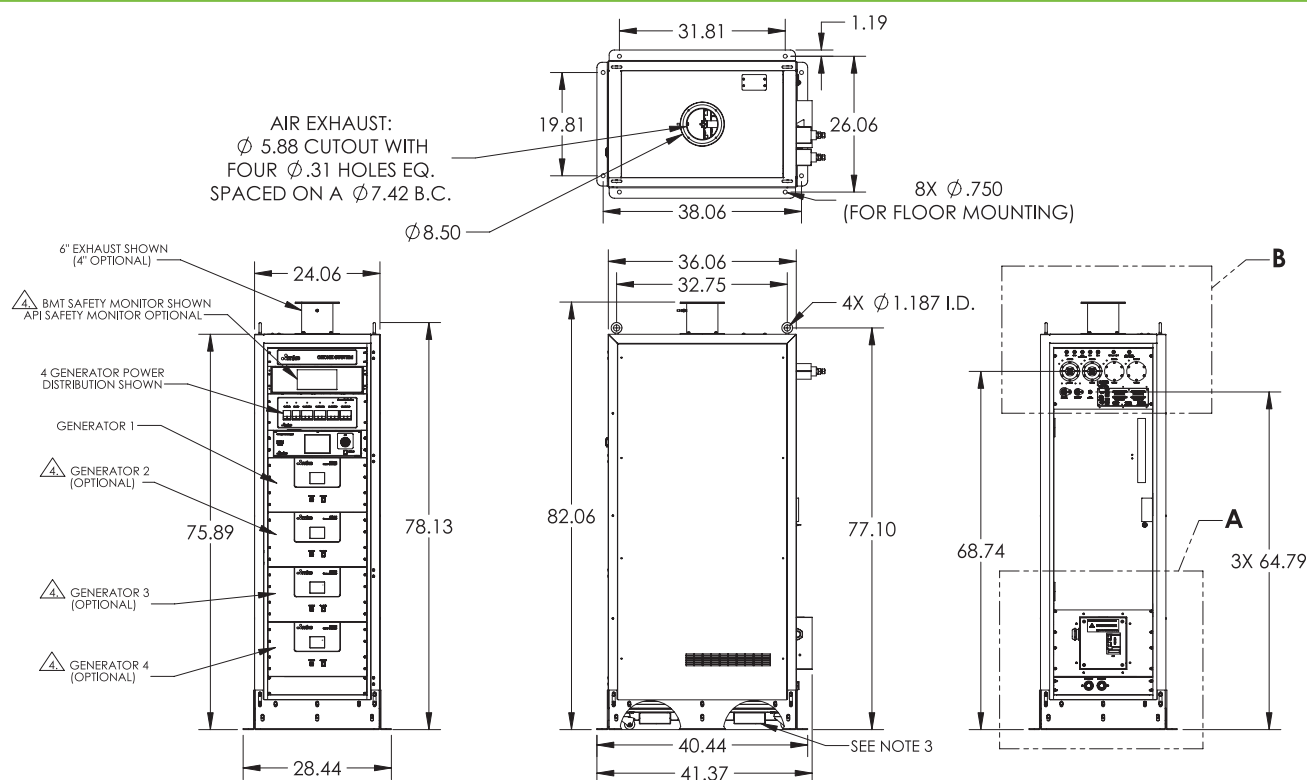


Figure 2 - AX8580 Ozone Generator Performance Graph

## Specifications *(based on standard unit without chiller)*

<b>Gases</b>	<b>Input Type</b>	<ul style="list-style-type: none"> <li>• Oxygen</li> <li>• Nitrogen</li> </ul>
	<b>Purity</b>	99.9995% minimum
	<b>Supply Pressure</b>	<ul style="list-style-type: none"> <li>• 70 ±2 psig (483 ±13.5 kPa; 4.92 ±0.14 kg/cm<sup>2</sup>) nominal</li> <li>• 80 ±2 psig (551 ±13.5 kPa; 5.62 ±0.14 kg/cm<sup>2</sup>) maximum N<sub>2</sub> pressure 10 psi higher than O<sub>2</sub> pressure</li> </ul>
	<b>Connections</b>	<ul style="list-style-type: none"> <li>• O<sub>2</sub>: ½" face seal (VCR®)</li> <li>• N<sub>2</sub> and O<sub>3</sub>: ¼" face seal (VCR)</li> </ul>
<b>Electrical Power</b>	<b>Voltage</b>	208 volts AC three phase + GND no neutral
	<b>Current</b>	65 amps max (fully populated system)
	<b>Frequency</b>	50/60 Hz
<b>Cooling Water</b>	<b>Flow Rate</b>	2.5 gpm per generator (configuration dependent)
	<b>Pressure</b>	40 - 100 psig
	<b>Temperature Range</b>	5 -17°C (Temperatures <12°C require additional line insulation as well as a system purge kit). <i>(Note: Ozone performance is PWC temperature dependent. Refer to performance graphs for specific system performance).</i>
	<b>Quality</b>	1-3 MΩ DI with 100 micron filter <i>(Note: Max DI water/Glycol blend: 70/30)</i>
	<b>Connection</b>	1" compression (Swagelok)
	<b>Heat Load</b>	5 kW per generator
<b>Exhaust</b>	<b>Type</b>	SEMI Category 4 (accidental or emergency release of hazardous gas or vapor)
	<b>Flow Rate</b>	<ul style="list-style-type: none"> <li>• Two-generator system requires 125 CFM (3.5m<sup>3</sup>/min)</li> <li>• Four-generator system requires 250 CFM (7m<sup>3</sup>/min)</li> </ul>
	<b>Static Pressure</b>	<ul style="list-style-type: none"> <li>• 125CFM (3.5m<sup>3</sup>/min) requires 0.1 in. H<sub>2</sub>O minimum (25 Pa), measured 3 ft inside the customer provided exhaust air duct</li> <li>• 250 CFM (7m<sup>3</sup>/min) requires 0.07 in. H<sub>2</sub>O minimum (17.4 Pa), measured at duct entrance to cabinet</li> </ul>
	<b>Connection</b>	6" diameter duct opening standard
<b>Control Air (if required)</b>	<b>Type</b>	CDA or dry nitrogen, 40µm filtered
	<b>Pressure</b>	70 - 100 psig
	<b>Fitting</b>	¼" compression (Swagelok)
<b>Environmental</b>	<b>Ambient Air Temperature</b>	5 - 40°C (41 - 104°F)
	<b>Relative Humidity</b>	30% - 90% (non-condensing)
	<b>Altitude</b>	Up to 3280 ft. (1000 m) above mean sea level
<b>Mechanical</b>	<b>Dimensions (W x H x D)</b>	26 in. x 82 in. x 38 in. (661 mm x 2083 mm x 965 mm)
	<b>Weight</b>	<ul style="list-style-type: none"> <li>• 705 lbs (320 Kg) for system with one generator 1 channel and BMT safety monitor</li> <li>• 1015 lbs (461 Kg) for system with four generator 1 channel and BMT safety monitor</li> <li>• 1045 lbs (480 Kg) for system with two generator 1 channel and BMT safety monitor and chiller</li> </ul>
	<b>Compliance</b>	ETL 9700614, SEMI S2-0715

## Dimensional Drawing



**NOTES:**

1. SWIVEL CASTORS, LEVELLING FEET, AND SEISMIC BRACE COMBINATION.
2. ALL FLOOR HEIGHTS ARE WITH CASTORS TOUCHING THE FLOOR. LEVELLING FEET ALLOW CASTORS TO RAISE 3/16" MAXIMUM.
3.  $\triangle$  6.04" x 2.19" I.S TUBING ON 18.19" CENTERS FOR FORKLIFT BLADES. WHEN OPTIONAL COMPONENTS ARE NOT USED, EMPTY SPACES WILL BE FILLED WITH BLANK PANELS.

Note: Unless otherwise specified, dimensions are nominal values in inches.

## Ordering Information

Please contact your local MKS sales office for price and availability information.