

# AX8575

## Stand-Alone High Flow, High Concentration Ozone Delivery System



The AX8575 stand-alone ozone gas delivery system is designed to provide high flow, high concentration, ultra clean ozone generation and delivery. This unit has the highest flexibility to meet the ever changing needs of the semiconductor industry. The AX8575 is a fully integrated, high output ozone gas delivery system specifically designed for use with an increasing number of semiconductor process applications such as Atomic Layer Deposition (ALD), Chemical Vapor Deposition (CVD), Tetraethyl Orthosilicate (TEOS)/Ozone CVD

(HDSACVD), photoresist strip, wafer cleaning, contaminant removal, and oxide growth. The system can be configured as a multi-channel system delivering ozone for up to 4 channels supporting multiple chambers or multiple tools. The AX8575 is available with an in-rack chiller option for high concentrations. Flow rates of up to 40 slm and concentrations up to 350g/Nm<sup>3</sup> can be achieved depending on the configuration of the system.

### Product Features

- Provides concentrations up to 350g/Nm<sup>3</sup> at high flow rates
- Allows for a fast, easy installation and quick start up with minimum connections required
- Modular design allows each channel to be process matched for maximum flexibility
- Closed-loop concentration control provides tighter process control for higher yields
- User friendly controller with touch screen provides easy, central controls for interfacing with the tool, ozone concentration and flow rate monitoring, and safety monitoring
- MKS patented, field-proven ozone generating technology is implemented in this system for proven reliability



### Key Benefits

- Environmentally friendly solution converts back to benign O<sub>2</sub>, eliminating the need for hazardous chemical disposal
- Generated at point-of-use removing the need for storage or transportation
- Increases throughput by reducing oxidation time due to high redox potential
- Supports single or multiple process tools for maximum efficiency and a lower cost of operation

## Description

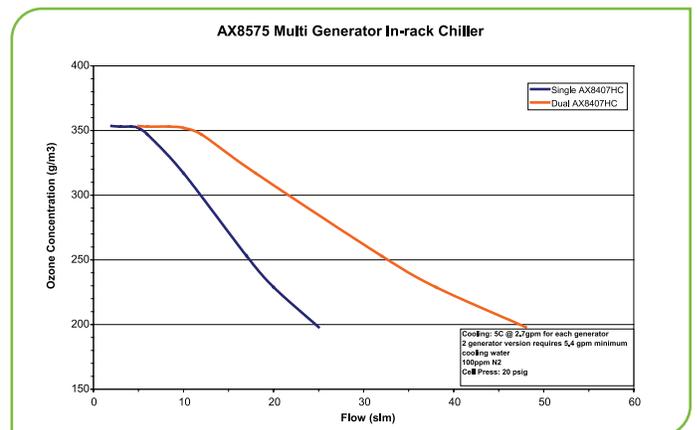
Ozone has many advantages over other oxidizers as a strong oxidizing agent. Ozone has a high redox potential, can be generated at the point-of-use, and it decays naturally into oxygen ( $2O_3 \Rightarrow 3O_2$ ). Therefore, it is considered a "green" chemical. If required, ozone can also be destroyed 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 ALD, CVD, TEOS/Ozone CVD, photoresist strip, wafer cleaning, contaminant removal, surface conditioning, and oxide growth.

The AX8575 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 thereby maintaining the same footprint. The ozone source for each channel is the production-proven AX8407 series ozone generators. It incorporates MKS patented, field proven, high concentration, ultra clean ozone generation technology. The AX8575 includes all subassemblies required for stand-alone operation, including power distribution, an ambient ozone safety monitor and status indicator panel.

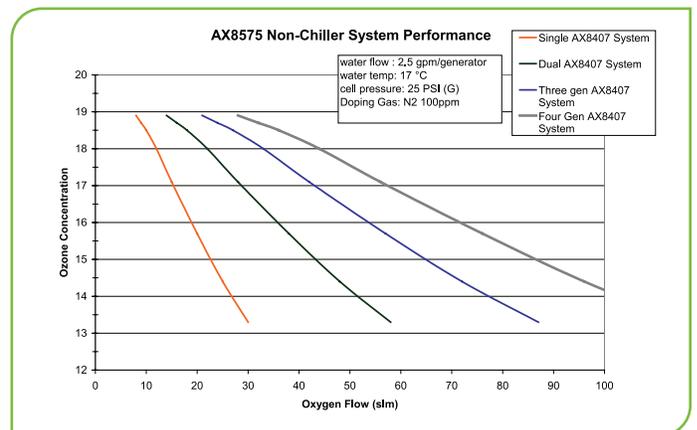
*Note: For ozone performance of each output channel, please refer to the AX8575 performance graph to the right.*



AX8407 Ozone Generator



AX8575 Multi Generator In-rack Chiller Performance



AX8575 Non-Chiller System Performance

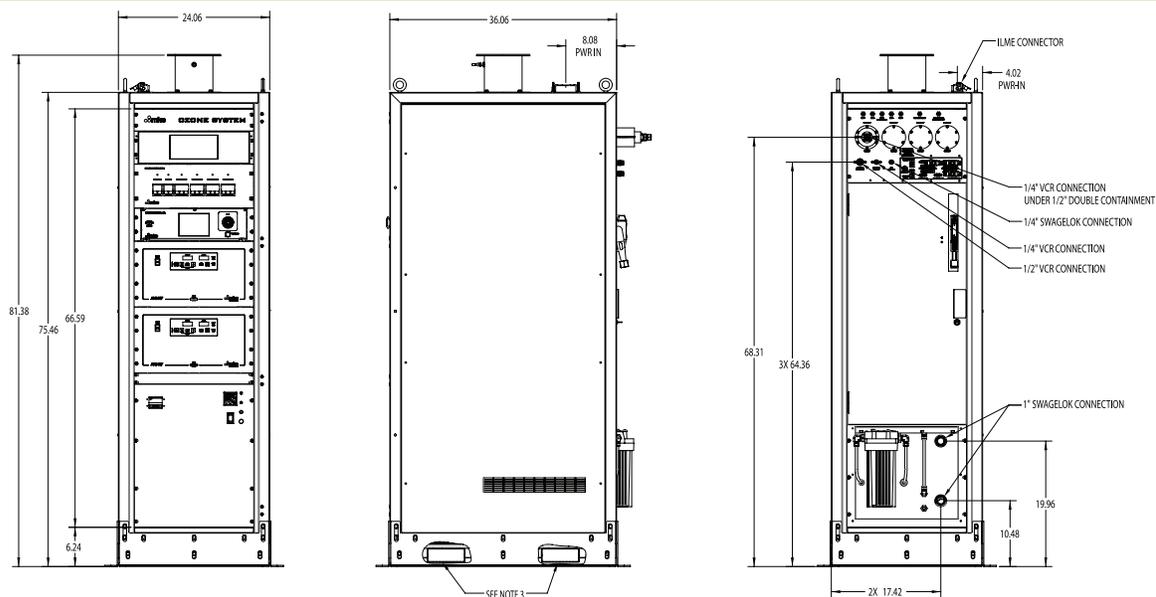
## Specifications

<b>Gases</b>	<b>Type</b>	<ul style="list-style-type: none"> <li>• Ozone</li> <li>• Oxygen</li> <li>• Nitrogen (20 - 100 ppm of total flow)</li> </ul>	
	<b>Purity</b>	99.9995% minimum	
	<b>Supply Pressure</b>	<ul style="list-style-type: none"> <li>• 50 psig (3.5 kg/cm<sup>2</sup>) nominal, 60 psig (4.2 kg/cm<sup>2</sup>) maximum</li> <li>• 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>• Ozone - ¼" face seal (VCR®)</li> <li>• Feed gases: N<sub>2</sub>- ¼" face seal (VCR), O<sub>2</sub> - ½" face seal (VCR)</li> </ul>	
<b>Electrical Power</b>	<b>Voltage</b>	208 volts AC (±10%), three phase	
	<b>Current</b>	31 amps RMS, 50 amps service (depending on configuration) (minimum of 10,000 A.I.C, 60 amps service with chiller)	
	<b>Frequency</b>	50/60 Hz	
<b>Cooling Water</b>	<b>Flow Rate</b>	<b>Facilities PCW requirement for systems with Internal Chiller</b>	<b>Facilities PCW requirement for systems without Internal Chiller</b>
		10 gpm nominal (water modulating valve range: 2-10 gpm)	2.5 gpm per generator (configuration dependant)
	<b>Pressure</b>	40 - 100 psig	40 - 100 psig
	<b>Temperature Range</b>	12 - 21°C	5*-17°C
	<b>Quality</b>	100 micron Filtration PWC	1-3 MΩ DI with 100 micron filter**
	<b>Connection</b>	1" compression (Swagelok®)	1" compression (Swagelok)
<b>Heat Load</b>	10 kw (based on two generator configuration)		5 kw per generator
	<b>Exhaust</b>	SEMI Category 4 (accidental or emergency release of hazardous gas or vapor)	
<b>Control Air (if required)</b>	<b>Type</b>	CDA or dry nitrogen, 40µm filtered	
	<b>Flow Rate</b>	150 cfm (70.8 l/s)	
	<b>Static Pressure</b>	0.10 in. (2.54 mm) H <sub>2</sub> O minimum, measured at the bottom of the duct flange adapter on cabinet	
	<b>Connection</b>	6" diameter duct opening or 4" diameter duct opening	
<b>Control Air (if required)</b>	<b>Pressure</b>	70 - 100 psig	
	<b>Fitting</b>	¼" compression (Swagelok)	
	<b>Environmental</b>		
<b>Ambient Air Temperature</b>	<b>Ambient Air Temperature</b>	41 - 104°F (5 - 40°C)	
	<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>	24 in. x 75 in. x 36 in. (610 mm x 1575 mm x 914 mm)	
	<b>Weight</b>	<ul style="list-style-type: none"> <li>• 600 lbs.(272 kg) for system with one generator</li> <li>• 880 lbs.(400 kg) for system with four generators</li> <li>• 1100 lbs. (499 kg) for system with two generators and internal chiller</li> </ul>	
	<b>Compliance</b>	CE, SEMI S2-0302, SEMI F47	

\* Temperatures <12°C require additional line insulation as well as a system purge kit.

\*\*Max DI water/Glycol blend: 70/30

## Dimensional Drawing



**NOTES:**

1. RACK HAS SWIVEL CASTORS, LEVELING FEET, AND SEISMIC BRACE COMBINATION.
2. ALL FLOOR HEIGHTS ARE WITH CASTORS TOUCHING THE FLOOR. LEVELING FEET ALLOW CASTORS TO RAISE 3/16" MAXIMUM.
3. TUBES FOR FORKLIFT BLADES: 5.80" X 2.00" INSIDE DIMENSIONS ON 18.16" CENTERS.

Note: Unless otherwise specified, dimensions are nominal values in inches (mm referenced).

## Ordering Information

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