



KINETICS GC 200

Gas Distribution Cabinet - Semi-automatic

- **Safe** — easy operation, meets all industry safety standards
- **Clean** — pure materials, precise manufacturing
- **Reliable** — proven components, accessible layout

SYSTEM OVERVIEW

The Kinetics GC 200 Gas Cabinet is a semi-automated gas dispensing system designed to provide an exhausted enclosure for the safe dispensing of toxic and hazardous gases used in semiconductor and photovoltaic manufacturing. The system is intended for corrosive, toxic and pyrophoric gases, where the release of these gases would create a severe hazard to humans and equipment. The system features manual vacuum-assisted N₂ purging during the cylinder change process. Redundant safety features provide automatic system shut-down in the event of gas leaks or other emergency conditions.

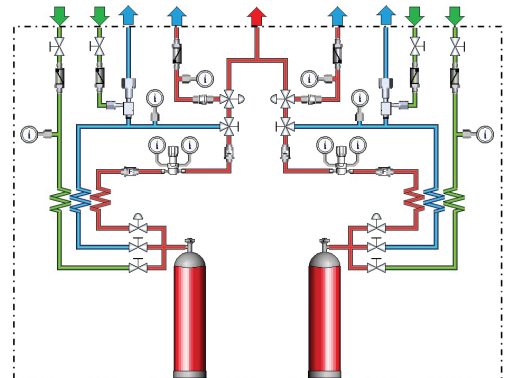
KEY FEATURES:

- Automatic gas shut-off valve, for emergencies
- Pressure gauges on high and low side of regulator
- Accommodates one, two, or three gas cylinders
- Manual, vacuum-assisted purging during cylinder changes
- Safety shut-down upon over-pressurization
- Water sprinkler for fire protection

OPTIONS:

- Hastelloy material within regulator for corrosive gases
- Nitrogen purge panel, where regulated N₂ is not available
- Co-Axial tube connection, for corrosive and pyrophoric gases
- Particle Filter, located after regulator, removes particles $\geq 0.003 \mu\text{m}$
- Gas Purifier (with integrated filter), located after regulator. Removes contaminants, such as H₂O, CO₂, O₂, and CO to < 1 ppb
- Excess gas flow sensors and automated cylinder valves, for added safety
- Cylinder Scale, for determining an empty cylinder for liquid gases
- Heater and Chiller assemblies, for specific liquid process gases

PROCESS FLOW DIAGRAM



Configuration with dual-cylinder operation and vacuum-assisted purging

RELIABILITY¹

- Availability > 99.999 %
- MTBF > 8000 Hours
- MTBA > 6000 Hours
- MTTR < 2 Hours

¹Reliability figures represent typical performance.

TECHNICAL DATA

CONTROLS

The Kinetics GC 200 Semi-Automatic Gas Cabinet features a simple PLC Controller, designed to:

- Shut down gas flow under emergency conditions, including internal hardware conditions or an external EMO signal
- Responds to a gas leak in the exhaust line
- Indicates when a gas cylinder is empty

SAFETY FEATURES

All Kinetics gas cabinets comply with applicable guidelines by:

- OSHA, TGO, CE
- Uniform Fire Code (UFC80) and National Fire Protection Agency (NFPA 318)
- Semi S2-0200
- NRTL Listing

SPECIFICATIONS

PARAMETER	CAPABILITY
Application	Distribution of corrosive, toxic and pyrophoric process gases (e.g., HCL, Cl ₂ , BCl ₃ , NF ₃ , PH ₃ , AsH ₃ , SiH ₄ , and mixtures)
Typical Gas Purity Levels	Total Purity ≥ 99.999999%
Purge Mode	Manual Operation, (N ₂ and vacuum-assist)
Process Gas Dispense Rate	≤ 3 M ³ /hr, with ¼" flow path
Process Gas Pressure, max	<ul style="list-style-type: none"> • Inlet: 3000 psi (205 bar) • Delivery: 100 psi (7 bar)¹
Cabinet Footprint (WxDxH)	<ul style="list-style-type: none"> • Single cylinder: 16" x 24" x 91" (400mm x 600mm x 2305mm) • Dual cylinders: 32" x 24" x 91" (800mm x 600mm x 2305mm) • Three cylinders: 48" x 24" x 91" (1200mm x 600mm x 2305mm)
Cabinet Materials	<ul style="list-style-type: none"> • 11-gauge cold-rolled carbon steel
Component Materials	<ul style="list-style-type: none"> • SS Diaphragm Valves & Regulator • Electropolished 316L SS tubing and fittings
Type of Valves and Pressure Regulator	316L SS Diaphragm, Hastelloy optional

¹Other outlet gas pressures are available, as options.

FACILITY REQUIREMENTS

UTILITY	REQUIREMENT	CONNECTION TYPE
Process Gas Outlet, with Co-Axial tube connection	n/a	316L SS, coaxial weld-¼", 0.035 wall x ½", 0.049 wall
Vacuum Generator, N ₂	<ul style="list-style-type: none"> • Pure, Filtered N₂ (>99.995%) • Regulated and adjustable up to 85 psig (5.8 bar) 	¼" (6.35 mm) Swagelok-Compression Fitting
Process Purge Gas Inlet, N ₂	<ul style="list-style-type: none"> • High-purity inert purge gas (>99.999%) • 80 psig (5.5 bar), adjustable • 30 slm flow, max 	¼" VCR
Pneumatic Supply, CDA	<ul style="list-style-type: none"> • 90 psig (6.2 bar) • 1 slm maximum flow 	¼" (6.35 mm) Swagelok-Compression Fitting
Process Vent Outlet	n/a	⅜" OD, 0.035 wall (9.5 mm) tubing-316L SS
Cabinet Exhaust	<ul style="list-style-type: none"> • Single cylinder: 200 SCFM @ 2" H₂O (340 Nm³/hr) • Dual cylinders: 300 SCFM @ 2" H₂O (510 Nm³/hr) • Three cylinders: 450 SCFM @ 2" H₂O (760 Nm³/hr) 	6" OD Stub
Sprinkler Water	68°C, max flow 114slm, 2 bar	½" M-NPT
Electrical supply	110-230 VAC, 50-60 HZ, Single Phase, 0.60 - 0.35 Amp	Compression, Bulkhead or Conduit