DYCOR®

PROCESS INSTRUMENTS

BULLETIN CG1000 RTP

ANALYZER SOLUTIONS FOR *YOUR* PROCESS!

CG1000 RTP Oxygen Analyzer

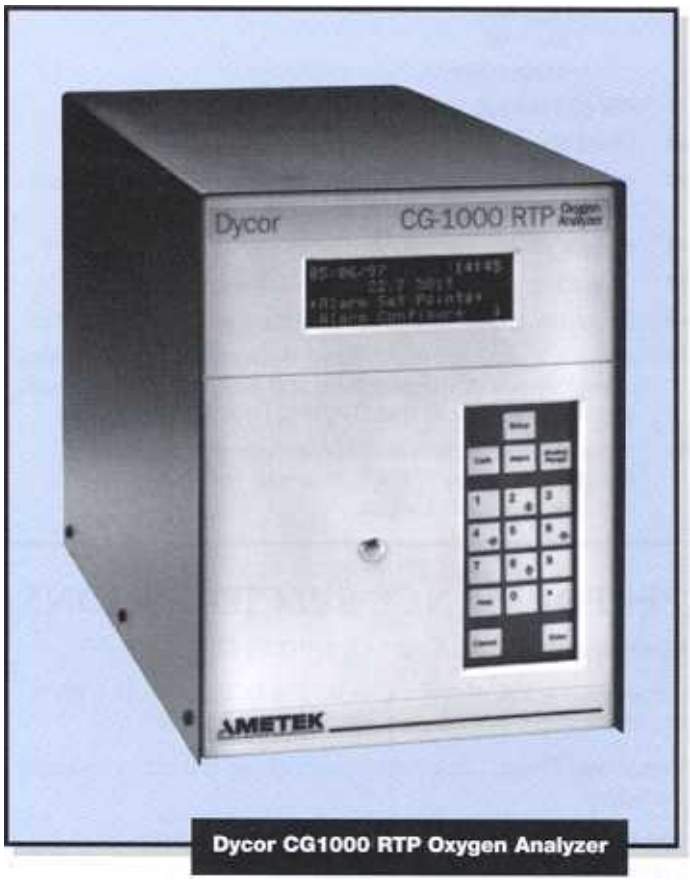
The Dycor CG1000 RTP Oxygen Analyzer improves your yield by detecting oxygen contamination at the parts-per-million level.

Rapid Thermal Processing (RTP) and fast ramp mini-batch furnaces represent a major technological shift in semi-conductor fabrication technology. The advantages offered by these processes however, can quickly be negated if there is not positive protection from the damaging effects of oxygen contamination.

The importance of oxygen contamination control is best illustrated in the deposition of the titanium silicide used to assure adequate conductivity between the silicon material and the overlaying metal conductor. When oxygen is present during the deposition, it reacts with the titanium and contaminates the process. The Dycor CG1000 RTP Oxygen Analyzer improves your yield by detecting oxygen contamination at the parts-per-million level.

And, it maximizes throughput by ending the purge cycle as soon as the oxygen background is at an acceptable level.

When you initiate a wafer processing cycle, you are assured the process environment meets expectations.



Dycor CG1000 RTP Oxygen Analyzer

KEY BENEFITS

- **Fast Response Over A Wide Operating Range**
  Your system will respond rapidly over an operating range of 0.1 ppm to 100% oxygen. The CG1000 RTP can be used to detect oxygen contamination and monitor the purge cycle.
- **Easy To Integrate Into Tool Controller And Data Acquisition System**
  The CG1000 RTP is equipped with an RS-232 or optional RS-485 port. A simple communications protocol allows efficient integration with the tool controller. Analog 4-20 mA outputs and I/O alarms are available.
- **Easy-To-Use, Menu-Driven Software**
  Your system incorporates user-friendly software with helpful messages so that you can begin to use the CG1000 RTP immediately. Advanced software diagnostics and on-line help simplify operations.
- **Electronic Flow Sensor**
  Your system will reliably monitor the flow of gases into the analyzer even providing a flow alarm should the flow stop. Potential for leaks and the high maintenance associated with mechanical flow meters are virtually eliminated.
- **Zirconium Oxide Sensor**
  Your system will not fail to a zero oxygen reading. It is always protected. Something not possible with other sensor technologies.

FEATURES

The Dycor CG1000 RTP from AMETEK was developed to meet the special requirements for use on RTP tools with the following features incorporated:

- Each instrument is leak tested to a specified maximum leak rate of 3 x 10^{-8} atm cc/sec. helium, which ensures gas delivery system integrity.
- Complete stainless steel sampling system.
- Contact closure for high oxygen reading.
- Serial communication for the following conditions:
  - heater failure
  - sensor failure
  - high flow
  - low flow
  - oxygen alarm
- RS-232 output.
- Mass flow sensor.
- Inlet port and outlet port connections are 1/8" Swagelok® compression fittings.
- Sensor seal is made with chemically inert material.
- Operating range of 0.1 ppm to 100% O_2.
- Zirconium oxide sensor for accuracy and fast response.
- 4-line x 20-characters vacuum fluorescent display shows combinations of oxygen, time and date, cell temperature, user-programmable text, T/C mV, cell mV, or flow.
- Password protection and context-sensitive help are standard. Display line 4 is reserved for full-text error and diagnostic messages.

- Two isolated current outputs. Select oxygen, cell temperature, T/C mV or cell mV as current output. Each can be 4-20 mA, 0-20 mA, 20-4 mA or 20-0 mA. Select hold or track during calibration.
- Diagnostics include watchdog timer, service alarm, system tests and a 20-entry event log.
- Real-time clock/calendar.
- Sample flow 50 to 200 ml/min. (106 to 425 cfh). 150 ml/min. recommended (318 cfh).

PERFORMANCE SPECIFICATIONS

Operating Range: 0.1 ppm O_2 to 100% O_2

Accuracy: ± 2% of reading or 0.05% O_2 absolute (0.5 ppm O_2, absolute for ppm range), whichever is greater

Response Time: Less than 5 seconds at 150 sccm over one decade

Repeatability: ±0.5% of reading or 0.1% O_2 absolute (0.1 ppm O_2 absolute for ppm range), whichever is greater

Environment:

Ambient Temperature: 0° F to 122° F (-18° C to 50° C)
Relative Humidity: 10% to 90%, non-condensing

System Compliance:

EMC Directive 89/336/EEC
Immunity Standard, EN50082-2, Heavy Industrial
Emissions Standard, EN5011,
Equipment Class: Industrial, Scientific, and Medical,
Safety Directive EN 61010

Maximum Inlet Temperature: 160° F (70° C)

Sample Flow: 50 to 200 sccm (150 sccm is recommended)
Sample Pressure: 600-810 Torr
Maximum allowable instrument pressure: 900 Torr

Power Requirements: 115/230 VAC, ± 10%, 50/60 Hz

Power Dissipation: 80 VA

Calibration Gas Requirements: Use calibration gases @ 50 to 200 sccm (150 sccm recommended)

Zero Gas: From 0.1 ppm to 10% O_2, balance N_2
Span Gas: One decade above zero gas (10 times greater) recommended

The CG1000 RTP is currently being used successfully on RTP tools located in numerous semiconductor facilities around the world. Contact AMETEK Process Instruments, Pittsburgh, Pennsylvania for more information.

AMETEK®
PROCESS INSTRUMENTS
150 FREEPORT ROAD, PITTSBURGH, PA 15238 U.S.A.
TEL: (412) 828-9040 FAX: (412) 826-0399 www.ametek.com

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