



OXIGRAF

Oxigraf Case Study: Oxygen/CO₂ Analyzer for Capnography



Model O2Cap Oxygen/CO₂ Analyzer for Capnography:

Monitoring of the concentration or partial pressure of oxygen and carbon dioxide (CO₂) in respiratory gases requires fast response without overshoot. The Oxigraf Oxygen/CO₂ Analyzers respond in less than a second. Electrochemical sensors may incorporate long averaging times, 20 or more seconds, for large, abrupt changes in oxygen concentration. Laser diode technology offers short response times to meet your capnographic requirements. The O2Cap family integrates an Oxigraf oxygen sensor with a NDIR CO₂ sensor for dual gas measurements for research, medical and laboratory measurements.

Oxigraf, Inc.; 238 E. Caribbean Dr.; Sunnyvale, CA 94089

Tel: 650-237-0155 Fax: 650-237-0159

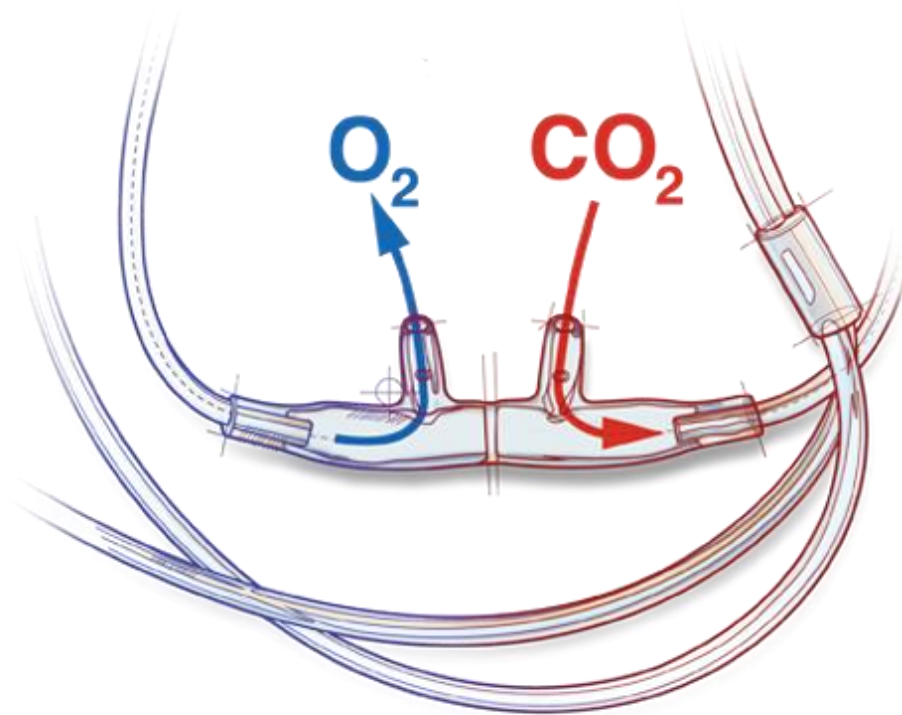
E-mail: sales@Oxigraf.com Web-site: <http://www.oxigraf.com>



OXIGRAF

The Oxigraf O2Cap may be the O₂/CO₂ Analyzer you need:

- Long life sensor, laser diode based sensor has a 10-year lifetime, does not require periodic replacement.
- Fast response time, unit will respond to abrupt changes in O₂ level in seconds.
- NO errors due to vibration and movement
- NO errors due to temperature changes
- NO errors due to changes in barometric pressure
- Accurately displays O₂ levels for measuring 5-100% oxygen concentrations and 0 to 10% CO₂



Oxigraf, Inc.; 238 E. Caribbean Dr.; Sunnyvale, CA 94089

Tel: 650-237-0155 Fax: 650-237-0159

E-mail: sales@Oxigraf.com Web-site: <http://www.oxigraf.com>



Oxigraf works with clients across a wide range of industries to address their unique analyzing needs. Recently, for instance, we helped a client who was looking for a way to perform capnography tests with fast breath by breath measurement. The detailed case study is outlined below.

The Problem:

This client was looking for a way to measure and display the oxygen and CO₂ concentrations in a gas sample drawn through the instrument. The company turned to Oxigraf for a reliable capnography solution.

The Solution:

The Oxigraf O2Cap is an analyzer that integrates a gas sampling system with sensors to measure and display the concentrations of oxygen and carbon dioxide in a sample as the percentage of a gas in the sample by volume. This method of expressing the concentration of a gas in a sample is also known as the percent volume fraction. In addition to the sampling and sensing systems in the O2Cap, the unit has a fluorescent display used for programming the unit and observing measurements, a keypad for programming the unit's operation and calibration, and analog outputs that allow the unit to be connected to data recording units like the OxiSoft.

When measuring the concentrations of oxygen and carbon dioxide in a gas, a sample is pumped from the input port on the front panel of the O2Cap, through the sample cell, and out an exhaust port on the back panel of the unit. Gas samples are drawn into the unit through an external filter on the input port that protects the sensors from contamination and through Nafion tubing on the filter that removes moisture from the samples that would affect the measurements and the unit's calibration. The oxygen concentration of the gas in the sample cell is measured using laser diode absorption technology. The laser diode in the oxygen sensor produces light at a wavelength (760 nanometers) that is absorbed by oxygen. The light passes through the gas pumped into the sample cell and onto the surface of a detector.

Oxigraf, Inc.; 238 E. Caribbean Dr.; Sunnyvale, CA 94089

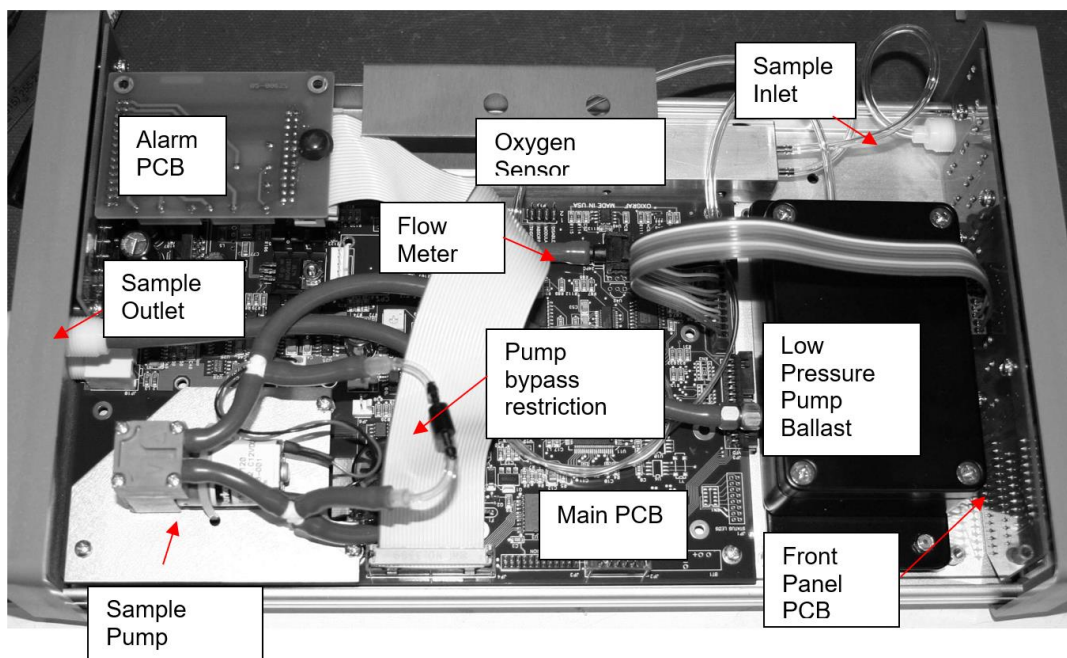
Tel: 650-237-0155 Fax: 650-237-0159

E-mail: sales@Oxigraf.com Web-site: <http://www.oxigraf.com>



The output of the sensor is inversely proportional to the concentration of oxygen in the sample because the amount of light reaching the detector decreases as the concentration of oxygen in the sample increases. The O2Cap has a very fast response time that enables breath to breath analysis of gas concentrations because the unit analyzes the gas sample every 10 milliseconds, or 100 times per second. During each measurement interval, the analyzer is zeroed automatically by electronic tuning of the laser to a wavelength not absorbed by oxygen.

The Oxigraf laser diode oxygen analyzer has a very long life span — especially compared to other options on the market — and requires no periodic replacement or servicing.



The Oxigraf Model O2Cap (AL) oxygen analyzer is a diverting oxygen monitor. Gas may be flowed under pressure with the sample pump off or on. The major components, pneumatic circuit, and flow path are shown in the block diagram above.

Oxigraf, Inc.; 238 E. Caribbean Dr.; Sunnyvale, CA 94089

Tel: 650-237-0155 Fax: 650-237-0159

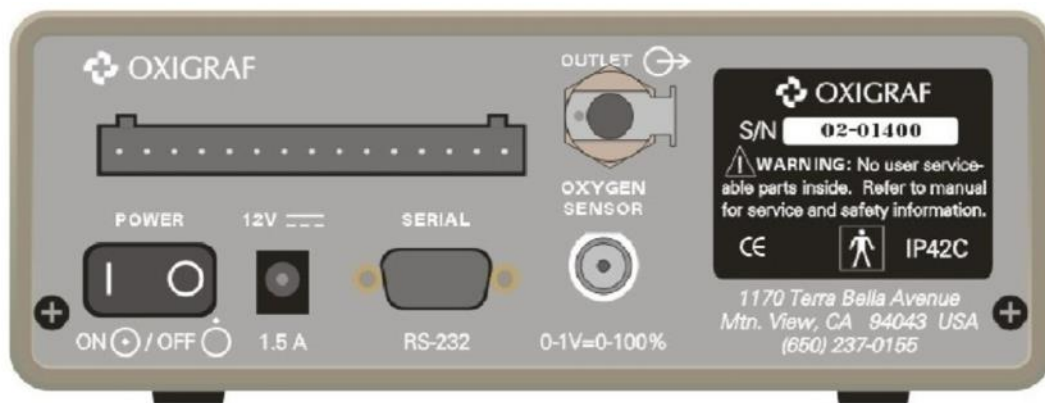
E-mail: sales@Oxigraf.com Web-site: <http://www.oxigraf.com>



The Result:

The client's problem was easily resolved with the use of our O2Cap analyzer model, which allowed for an accuracy of $\pm 0.2\%$. This client was very pleased with the system we provided and has since spread the word about our product line and capabilities to other customers in the medical industry.

The O2Cap gas analyzer is calibrated at the factory and is ready to take measurements. Just connect the source of the gas sample to the gas analyzer with the proper connections and press the RUN key.



The model O2Cap and O2CapB have luer type front panel gas sample input fitting for research applications. The model O2CapD have CPC O-Ring quick connect gas sample fittings for industrial applications.

All of the Model O2Cap, O2CapB and O2CapD include a sampling pump that will draw a sample from atmospheric pressure; with an external flow control valve, it will accommodate pressurized gas up to 1.3 psig (17 psia or 120 kPa).

An optional gas sampling valve allows the pump to draw a sample for a programmable number of seconds. This feature is useful for sampling from Modified Air Packaging (MAP).



Oxigraf O2Cap Oxygen/CO₂ Features:

- Internal Sampling Pump.
- Relay contacts can be used to control external equipment.
- Relay contacts are Form C (SPDT), 5 A 250 VAC rating.
- Analog 4 to 20 mA, analog 0 to 1 VDC, and digital RS-232 outputs. Visual, audible, and remote alarms for Low O₂, High O₂, Low Flow and System Check.
- Samples and displays oxygen from 5 to 100% without range switching.
- Calibrates electronically using 10%O₂/5% CO₂ and 100% O₂ cal gases.
- Electronic flow meter and display included.
- Front panel CPC-Quick connect fitting.
- Fast Response (< 1 sec) for prompt analysis.
- Pressure and temperature correction automatically.
- No false oxygen readings with Ar, H₂O, CO₂, CO, or hydrocarbons.
- Rugged laser diode absorption spectroscopy oxygen analysis.
- Measures at low flows of 50 to 250 ml/min, conserving product gas.

Learn More:

Oxigraf has over 20 years of experience producing laser gas sensors and instruments and is the leading manufacturer of laser absorption spectroscopy sensors for oxygen gas measurement and analysis. Oxigraf O2iM Oxygen Safety Monitors have been widely adapted in hundreds of facilities since 2004, replacing a wide range of less reliable electrochemical sensors. Oxigraf O2 and CO2 sensors have been widely adapted by OEM manufacturers of medical respiratory gas monitors in order to measure breath waveforms, end-tidal gas values, anaerobic thresholds, VO₂ max, and non-invasive cardiac outputs. For more information on our sensors, or to speak with an expert about your specific monitoring needs, contact the team today.

Oxigraf, Inc.; 238 E. Caribbean Dr.; Sunnyvale, CA 94089

Tel: 650-237-0155 Fax: 650-237-0159

E-mail: sales@Oxigraf.com Web-site: <http://www.oxigraf.com>