

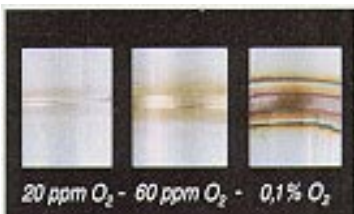
Oxygen Monitor for Welding

Model SGI-2



Introduction to SGI purge gas analyzer

Inert gas welding requires the exclusion of oxygen from the weld zone during the welding process. The shield gas (typically argon) needs to be free of oxygen from air leaks into the feed hose and the back side of the weld needs to be protected with a purge, or backing, gas to ensure a low or controlled oxygen concentration on the back face of the weld. On the front face of a weld the inert



gas stream (provided it is free of leaks) efficiently excludes oxygen from the weld zone. On the back side of the weld special precautions must be taken to prevent oxidation. This involves the isolation of the back side of the weld with fixtures that

provide for the purging of this area with an inert atmosphere. The SGI-2 instrument works with these fixtures to continuously sample the purge gas and to monitor the residual oxygen concentration.

Monitoring the weld gases with an SGI-2 adds a quantifiable element of quality control to the inert gas welding process. It also provides an economic benefit by giving the welder the information he needs to accurately judge the purge gas flow rate and purge period. This can result in substantial savings in the costs of purge gas.

Sensitive, accurate and fast

The SGI is very sensitive to the presence of oxygen, the detector responds in 50 mS and is sensitive down to ppm levels, yet does not saturate or lose sensitivity on exposure to high oxygen levels. This makes it particularly suitable for measuring low oxygen in purged systems where the oxygen level will be high,

Features

- Faster accurate monitoring of residual oxygen in purge gas.
- Measures Oxygen 1ppm to 5000 ppm.
- Fast response typically 1-2 seconds depending on hose length.
- Self contained includes sample pump and hose.
- Easy to read scale with bright LED light bar.
- Analog output for alarms or other equipment.
- Long life sensor, won't saturate in air.
- Robust industrial strength instrument.
- Includes calibration certificate valid for 12 months.
- Ready to use with sample comes with sample hose and instructions.
- Robust industrial design ready for 7x24 work period.
- Proven technology hundreds already in use.

(ambient oxygen 21%) before the inert purge gas flow is started. The overall system response time is typically a few seconds and depends on the length of hose used to connect to the measurement point.

Easy to Set up and Operate

The instrument is easy to use. The first step is to connect the sample hose to the location where the gas is to be measured. This is typically in the space behind a purge dam. The SGI-2 will start sampling the gas as soon as the pump button is depressed. The sampling is continuous until the pump is switched off. The bar of LEDs across the front panel represent the oxygen concentration range from 1 ppm to 5000 ppm. The scale is logarithmic so that the area of interest typically 10 to 100 ppm takes up most of the scale and is easy to read even from several feet away.

Calibrated and ready to use

The SGI comes ready calibrated, with a certificate of calibration, and only needs to be re-calibrated once a year. The instrument can be re-calibrated by the user or returned to Topac for this service.

Gap Probe option

The gap probe is a fine stainless steel tube 1.6 mm in diameter and 6 inches long. It attaches to the end of the sample hose which is then connected to the front of the instrument. The SGI now measures the oxygen concentration of the gas drawn in to the probe. The probe can be inserted through the gap in front of the weld to examine the atmosphere in the back of the area to be welded. This is convenient for difficult locations which may not be easily accessible with a purge baffle.

Principle of Operation

The SGI-2 contains a small pump which draws a continuous sample from the purge gas in the welding zone. This sample is passed into a special zirconium detector that is very sensitive to the presence of oxygen. A zirconium sensor is an electrochemical oxygen concentration cell with a solid ceramic electrolyte. It has the property of producing a small emf (voltage) in the presence of oxygen. The relationship between the emf produced by the detector and the oxygen concentration is well understood and is a characteristic of the sensor. All sensors produce the same result and the results are highly repeatable. This means that the detector can be calibrated directly in oxygen concentration units.

Sensors of this type can be used to measure concentrations from ppm all the way up to 100% oxygen. They are very reliable, the calibration is stable over long periods (years) and a detector calibrated for use with low ppm concentration as in the welding application will not saturate or show any degradation when exposed to high oxygen concentrations (ambient air for example). A practical consequence of this is that it does not matter if you switch the analyzer on before you start the purge process

Ordering Information

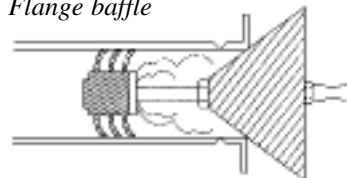
SGI-2 complete	Complete instrument includes Monitor with built in sample pump, 3 ft connecting hose, calibration certificate and reusable shipping carry case.
SGI2-GAP	1.6 mm diam stainless gap probe

Specifications

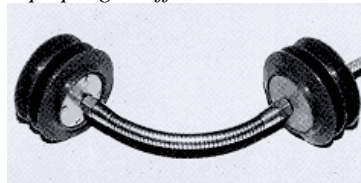
Sensor Type - oxygen	Ceramic / Zirconium detector
Measuring Range Oxygen in Argon	5000 ppm to 1 ppm
Measuring Range Oxygen in Fourmier	500 ppm to 10ppm oxygen
Accuracy	better than 1% FSD
Sample flow rate	2 liters/min
Sample Hose	5 mm OD oxygen impervious hose
Display	Bar of LED diodes full width front panel
External Output	4 - 20 mA analog signal
Dimensions	194 x 235 x 420 mm
Weight	6.0 kg

Purge Dams and Baffles

Flange baffle



Pipe purge baffle



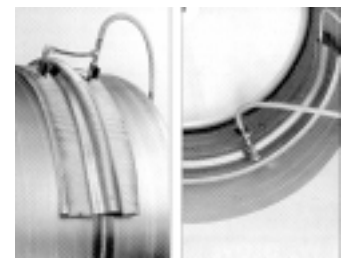
Cylinder Purge Baffle



Topac also offers a range of related products for controlling the flow of purge gases in different welding situations. These purge fixtures confine and distribute gas in a uniform manner in the immediate vicinity of the weld. There are different designs for tubes, pipes and cylinders of various sizes as well as for flanges and curved and flat components.

You can see more information on our web site at:
www.topac.com/weldtools.html

Curved Purge Baffles



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