

Total Quality Assurance for Carbon Dioxide

TQACO2


www.paclp.com



 **ANTEK**
by PAC

Full Range of Analytical Solutions for CO₂ Total Quality Assurance

- User-friendly Sample Handling requires Minimal Operator Involvement
- Turn-key System with an Easy-to-Use Single Operating Data System
- Fast and Highly Accurate Analysis Results

TOTAL QUALITY ASSURANCE FOR CO₂...

If you are associated with carbon dioxide in your business, then the levels of impurities are important to you. No matter where you are in the CO₂ distribution chain, any contaminants present will ultimately affect you, your customers down line, and your consumers.

Protect Your Product

Sulfur, total and aromatic hydrocarbon, oxygen, and moisture have been implicated in carbon dioxide contamination. Likewise, nitrogen levels in CO₂ are known to adversely affect food, beverage, and semiconductor production. Sulfur in CO₂ can kill catalysts in some processes and can ruin product in the food and beverage industry. Traditionally, sulfur has been detected using a simple tape, stain tube, or “sniff” test. In most cases, this has been sufficient to reject a bad lot of carbon dioxide. In recent years, however, more and more beverage products have been pulled from consumer shelves due to sulfur contamination in carbon dioxide. Carbonyl sulfide and other sulfur species are missed by tape and stain tube tests as they are often specific for only certain sulfur compounds.

Millions of dollars worth of beverages have been pulled as a result of this contamination, not to mention local consumer loyalty losses when such events have occurred. Ultimately, responsibility for these events often falls on the shoulders of the carbon dioxide supplier or distributor. PAC offers a unique turn-key system for the quality assurance of CO₂. The TQACO2 is a complete analyzer package with a single operating data system. Gas suppliers and bulk CO₂ users can now generate their own load report to show compliance with specifications.



FULL RANGE OF ANALYTICAL SOLUTIONS FOR CO₂ TOTAL QUALITY ASSURANCE

- **R6000S Total Sulfur**
- **R6000N Total Nitrogen**
- **R1140 Total Hydrocarbons**
- **R1020 Aromatics Hydrocarbon**
- **Trace Oxygen Analyzer**
- **Moisture Analyzer**

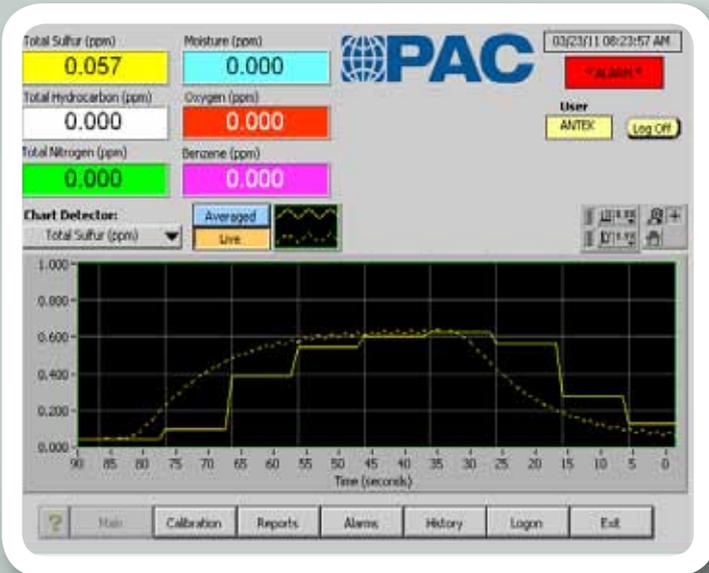
USER-FRIENDLY SAMPLE HANDLING

The sample preparation system extracts a representative sample from delivery or process points. The sample is pressure regulated and vaporized prior to introduction into the analyzers. Flow control is independently regulated at each analyzer. Multi-stream sample panels with vaporizing regulators are available for monitoring more than one sample point.

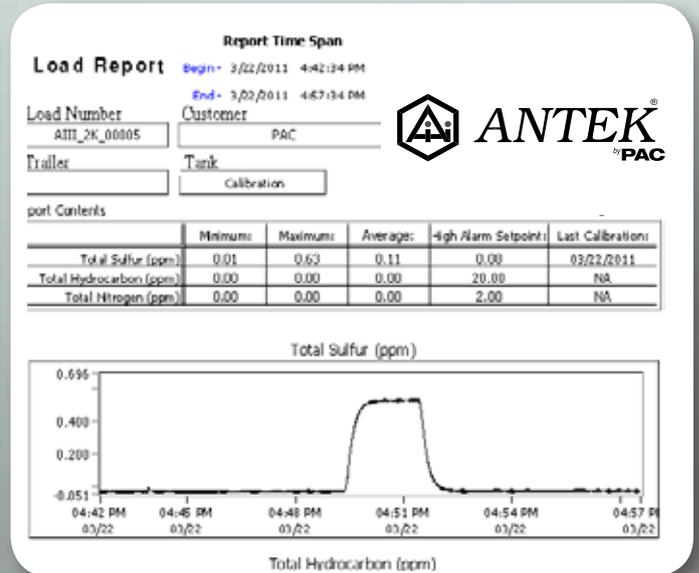
EASY-TO-USE SINGLE OPERATING DATA SYSTEM

ANTEK's custom TQACO2 software enables PC-based operation with multi-level, password-controlled access to various system functions. This sophisticated program allows report customization according to your application needs, yet its Windows®-based interface is intuitive for operators with little computer experience. User configurable displays and features include calibration mode, alarm status, load reports, stream selection (auto or manual), extensive historical archiving capabilities, averaging, trending, channel configurations, and other useful information to monitor and report impurities in CO₂.

The TQACO2 data system is provided in a standard PC-based system with an easily accessible, rack mounted keyboard. The PC can be easily upgraded as desired and, because it is not embedded into the system, can be utilized for other purposes. An optional monitor and printer allow complete visual control of the monitoring system.



Real Time Continuous Display



Load Report

FAST AND HIGHLY ACCURATE ANALYSIS RESULTS

IMPURITY	MODEL	ISBT SPECS (WEIGHT/VOL)		DETECTION METHOD
Total Sulfur	R6000S*	100 ppb	<10 ppb	Pyro-UV Fluorescence™ (UVF)
Total Nitrogen	R6000N	2.5 ppm	<10 ppb	Pyro-Chemiluminescence™
Total Hydrocarbons (THC)	R1140	50 ppm	<2 ppm	Flame Ionization Detector (FID)
Aromatic Hydrocarbons (AHC)	R1020	20 ppb	<5 ppb	UV Fluorescence (UVF)
Oxygen		30 ppm	<1 ppm	Electrochemical Sensor
Moisture		20 ppm	<1 ppm	Electrolytic Cell

*bypass switch option available to measure SO₂ - Contact us to discuss availability for other impurity measurements

Antek by PAC TQACO2 Detection Capability Overview



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PAC Authorized Representatives are also located in most countries worldwide. For more information visit www.pacpl.com

SPECIFICATIONS

PERFORMANCE	
Measurements available	Total Sulfur, Total Hydrocarbons (as Methane), Total Aromatic Hydrocarbons, Moisture and Oxygen
Test Methods/Regulatory Approvals	Per ISBT recommendations, ASTM D6667 (total sulfur);
Ambient Temperature Range Relative	10-40 deg°C
Humidity	0-95% RH, non-condensing
Area Classification	Non-hazardous, general purpose
MEASUREMENT DETAIL/UTILITY GAS REQUIREMENTS	
R6000S Total Sulfur Detection - Pyro-UV Fluorescence Full scale range - ppb to % level Response time T90 < 30 seconds ISBT specifications (maximum) 100 ppb	Oxygen 99.975% (Zero Grade) purity, < 5 ppm moisture, regulated to 35 psig, nominal consumption (25 ml/min furnace) Argon or Nitrogen, 99.975% (Zero Grade), 35 psig, typical fl ow rate 10-25 cc/min
	Calibration gases for R6000S Zero Gas: 99.975% purity, <5 ppm moisture, sulfur and hydrocarbon free CO2 regulated to 35 psig, nominal consumption 850-950 ml/min during calibration only
R6000N Total Nitrogen Detection - Pyro-chemiluminescence Full scale range - ppb to % level Response time T90 < 3 minutes ISBT specifications (maximum) 2.5 ppm	Span Gas: 250-750 ppb (mole%) sulfur in COS (carbonyl sulfide) in CO2 or Argon or Nitrogen, regulated to 35 psig, nominal consumption 850-950 ml/min during calibration only
	Oxygen: Oxygen 99.975% (Zero Grade) purity, < 5 ppm moisture Oxygen Gas for pyro conversion and ozone generation.
R1020 Aromatic Hydrocarbons Detection UV Fluorescence	Calibration gases for R6000N Zero Gas: Carbon dioxide 99.975% purity, <5 ppm moisture, free of nitrogen impurities
	Span/Standard Gas: Carbon dioxide balance with ppm level of NO or NH3
R1140 Total Hydrocarbons Detection Flame Ionization	Zero Gas: Carbon dioxide 99.975% purity, <5 ppm moisture, Calibration standard ppb benzene in CO2
R1140 Total Hydrocarbons Detection Flame Ionization	Fuel gas: 40% Hydrogen/60% Helium, 100 cc/min; Instrument Air with < 1 ppm carbon impurity, 200 cc/min; Calibration standard ppm CH4 in CO2
OPTIONS	
Mounted Rack enclosure	Up to 7 analyzer modules can be mounted per rack
Sample System	Up to 6 streams available, all analyzer modules plumbed for common inlet; gas or liquid stream capability, pressure regulation available
Computer	Rack-mount PC available
Data Acquisition system	Interface system for 4-20 mA output signals to PC for software interface, each interfaces up to 6 4-20 MA outputs
TQACO2 integration software	For printout of QA reports, provides data logging and monitoring of 4-20mA outputs

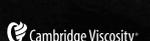
ANTEK BY PAC

Leading Elemental Analysis and Chromatography
Since 1967, Antek has been a global leader in lab and on-line elemental analysis instrumentation and custom chromatography instruments that detect sulfur and nitrogen/sulfur compounds. The Antek line also includes process analyzers for monitoring total nitrogen and sulfur in liquids, gases and LPGs and determination of nitrogen, sulfur, total hydrocarbon, and aromatics for the quality assurance for CO₂.

Continuing research and development may result in specifications or appearance changes at any time

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