Teledyne Analytical Instruments

CDQC

Carbon Dioxide Quality Control System

Carbon dioxide is routinely used within the food and beverage industry for the purposes of preserving the quality of food products and the carbonization of beverages. With the increasing demand for improvements in the purity of CO_2, manufacturers of highly sensitive gas analyzers are being challenged to detect several contaminants in CO_2 on a continuous basis. In response to this market demand, Teledyne has designed the Carbon Dioxide Quality Control (CDQC) System. The CDQC Analysis System provides manufacturers of high purity carbon dioxide with the ability to accurately detect desired impurities in a single, cost effective, integrated system.

TELEDYNE PRODUCT SCOPE

The CDQC System can be designed to detect any combination of the following analyzers to ensure the CO_2 product used in a process meets industry standards:

- Trace levels of Total Sulphides as SO_2 via UV Fluorescence (0-50 ppb to 0-20 ppm)
- Trace levels of Total Hydrocarbons via FID (0-1 ppm to 0-1000 ppm)
- Trace levels of Moisture via Al_2O_3 sensor (–100ºC to + 20ºC)
- Trace levels of Oxygen via Micro-fuel Cell sensor (0-10 ppm to 0-1%)
- CO_2 Purity Analysis via NDIR (98-100%)

SYSTEM CONFIGURATION

The analyzers can be mounted in either a NEMA-12 or NEMA-4/4X system enclosure with dual door access to facilitate analyzer / sample system adjustments. The system can be designed for either stationary installation or with casters allowing the system to be easily moved to various points in the plant. If required, the system can be winterized allowing the system to be mounted in an outdoor environment.

By designing the CDQC System on a "plug and play" basis, the addition or subtraction of any one of the analyzers noted above has little impact on the redesign cost of the system required for a particular application need.

SAMPLE SYSTEM

The CDQC System also includes an integral sample handling system providing pressure regulation, individual flow control, and calibration valving for each analyzer required to satisfy the system design needs. Any liquefied CO_2 sample streams must be vaporized at the sample take-off point prior to being introduced to the CDQC system.

FEATURES

- Single, integrated system design
- "Plug and Play", cost effective modular configuration
- RS-232C serial interface capabilities
- Integral sample conditioning system
- Continuous analyzer performance - all units
- An optional PLC to interface the report generation devices for load reporting

TOTAL SULFIDES

The Model 6200A Total Sulfides Analyzer utilizes the field-proven UV Fluorescence method to continuously detect total sulphides as SO_2 as low as 0-50 ppb full-scale. A quartz converter (PID controlled to 1000ºC) is used to convert the sulfides, when mixed with scrubbed ambient air, into SO_2 via high temperature oxidation. An internal vacuum pump is employed to draw both the sample and ambient air into the converter module.

The 6200A can utilize either certified calibration gases in association with the PRC-6000 Calibration Module (for ppb H_2S span gas generation) or a certified ppb H_2S permeation tube with the IZS (internal zero / span valves) option.

TOTAL HYDROCARBONS

The Model 402REU Trace Hydrocarbons Analyzer uses a Flame Ionization Detector (FID) to continuously detect as low as 0.1 ppm total hydrocarbons (methane equivalent basis) in CO_2. The 402REU incorporates a sample selector module to control the flow of the sample and support gases to ensure an accurate THC analysis.

TRACE MOISTURE

The Model 8800A, utilizing Hyper Thin Film (HTF) ™ Al_2O_3 sensing technology, can detect the dewpoint of CO_2 from –100ºC to +20ºC. The 8800A controller can be programmed to read on either a ppm or dewpoint basis. The HTF sensor provides the user with quicker response time, lower drift over a wide ambient temperature range, and a greater signal to noise ratio than conventional Al_2O_3 sensors. The uniformity in HTF manufactured sensors allows them to be freely interchanged without having to reprogram the controller when replacing sensors.

TRACE OXYGEN

The Model 3190, utilizing the A-2C electrochemical Micro-fuel oxygen sensor, can detect O_2 as low as 0.1 ppm. The A-2C sensor, utilizing a buffered electrolyte to contend with the CO_2 sample gas, is a low cost, disposable, zero maintenance sensor requiring only span gas for accurate calibration.

CO_2 PURITY

The Model 7100 CO_2 Purity Analyzer employs NDIR technology to continuously detect on a 98-100% suppressed range basis. The 7100 eliminates having to invest lab personnel time to periodically conduct grab sample analysis to determine the purity levels of the CO_2 being produced.

CDQC CARBON DIOXIDE QUALITY CONTROL SYSTEM

SPECIFICATIONS:

Model 6200A Total Sulphides Analyzer

Ranges:	0-50 ppb to 0-20,000 ppb full scale (user selectable)
Output:	10V, 5V, 1V, 100mV (selectable); 4-20mAdc iso (optional)
RS232 (I/O):	Standard
Operating temp range:	5 to 40°C
Power:	100-240Vac, 50/60 Hz (user specified)
Readout:	2-line alphanumeric vacuum fluorescent display (VFD)
Converter:	High temp (1000°C) quartz converter
Calibration:	
Option 1:	PRC-6000 calibrator module (requires user supplied 5-6 ppm H_2S in CO_2 standard)
Option 2:	Built-in certified H_2S permeation device (100-200 ppb) with auto-cal valves

Model 402REU Trace Hydrocarbon Analyzer

Ranges:	0-1 ppm up to 0-1000 ppm CH_4 equivalents (switch selectable)
Method:	Flame Ionization Detector (FID)
Output:	0-1 Vdc & 4-20 mAdc isolated
Power:	100-240 Vac, 50/60 Hz (user specified)
Accuracy:	±1% of full scale
Readout:	Digital display
Alarms:	2 x fully adjustable alarms
Sample selector module:	Integral - Standard (to control flow of sample and support gases)
Operating temp range:	0-50°C
Calibration gases required:	N_2/H_2 fuel mix, HC-free air, HC-free zero gas and 80 ppm CH_4 in N_2 for span

Model 8800 Trace Moisture Analyzer

Range:	-100 to +20°C
Accuracy:	±3°C
Sensor type:	Hyper Thin Film (HTF)™ Al_2O_3
Output:	4-20 mAdc isolated; RS-232C (optional)
Power:	100-240 Vac, 50/60 Hz
Readout:	LCD (on a Deg F, Deg C or ppm basis)
Operating temp range:	–10 to 50°C
Calibration gas:	None required; factory calibrated

Model 7110 CO_2 Purity Analyzer

Range:	98-100% CO_2
Sensor type:	NDIR
Accuracy:	±2% of full scale at constant temperature
Output:	4-20 mADC; isolated & RS-232C
Power:	100-240 Vac, 50/60 Hz (specify)
Readout:	2-line alphanumeric vacuum fluorescent display (VFD)
Operating temp range:	5 - 45°C
Calibration gases:	Zero, span, and flowing reference (30cc/min high purity CO_2)

Model 3190 Trace O_2 Analyzer

Ranges:	0-10, 0-100 ppm O_2
Sensor type:	Electrochemical, Class A-2C (for CO_2 service)
Accuracy:	±2% at full scale
Output:	4-20 mAdc
Power:	85-240 Vac, 50/60 Hz
Operating temp range:	0-50°C
Calibration gas:	Span mixture only (80-90 ppm O_2 in CO_2)

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Warranty

Instrument is warranted for 1 year against defects in material or workmanship

NOTE: Specifications and features will vary with application. The above are established and validated during design, but are not to be construed as test criteria for every product. All specifications and features are subject to change without notice.

CERTIFIED
ISO 9001

Accredited by the Council for Accreditation (RvA)

INTERTEK CERTIFICATION

ANSI-RAB QMS ACCREDITED
National Accreditation Program