Sulfur & Nitrogen process analyzers

6200 series

PAC
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ANTEK by PAC

Fast, Precise Measurement of Liquid, LPG, and Gas Samples

- 1 Minute, High Speed Version available for Sulfur Analysis
- Measures total sulfur, total bound Nitrogen or both
- Sensitivity from 250 ppb to % Levels
- Excellent Reproducibility and Linearity
- Fast Cycle Time: 1.5 to 5 Minutes per stream

6200 Series

THE LEADERSHIP CONTINUES…

Building upon years of innovation, analytical leadership, and customer satisfaction, ANTEK sets the standard against which other nitrogen/sulfur analysis instruments are measured.

PROCESS SULFUR & NITROGEN ANALYSES

- UV- Fluorescence (UVF) Spectrometry sulfur and chemiluminescence detection (CLND) nitrogen technology
- Fast, precise measurement of liquid, LPG, and gas samples
- 1 minute, high speed version available for sulfur analysis in pipeline applications where response time is critical
- Total sulfur, total bound nitrogen, or both
- Sensitivity from 250 ppb to % levels
- Excellent reproducibility and linearity
- Fast cycle time: 2.5 to 5 minutes per stream, programmable
- Dual range and dual-stream capabilities built-in
- No environmentally hazardous catalysts, reagents, tapes or other wastes; no radioactive license required
- No matrix affects; no CO_2 interference
- No columns
- Easy to operate and maintain

APPLICATION VERSATILITY

The 6200 Series measures sulfur and/or nitrogen in virtually any liquid or gas sample. Common applications include:

- Gasoline
- Naphtha
- Diesel
- Gas Oils
- Natural Gas
- Kerosene
- Mo-Gas
- LPG
- Water

TOTAL SULFUR ANALYSIS: MODEL 6200 S

Our UV- Fluorescence (UVF) Spectrometry sulfur technology is a fast and accurate method, providing determinations down to 250 ppb and up to percent levels with results in minutes.

$$R\text{-}S + O_2 \xrightarrow{1000^{\circ}C} SO_2 + \text{combustion products}$$
$$SO_2 + h\nu \rightarrow SO_{2^*} \rightarrow SO_2 + h\nu'$$

A fixed amount of sample is combusted at a high temperature to convert all sulfur into Sulfur Dioxide (SO_2) molecules. The SO_2 molecules are then exposed to ultraviolet light, causing them to fluoresce. The light produced is converted by a photomultiplier tube into a signal that is proportional to the amount of sulfur present. This UV method is more stable than lead acetate tape methods without the consumables or lead waste disposal problems. It eliminates matrix interference problems of x-ray, providing accurate results to much lower levels of sulfur. It does not require column switching or back flushing; and because our detector eliminates problems of quenching from CO_2 or water, you'll achieve more reliable results with excellent linearity.

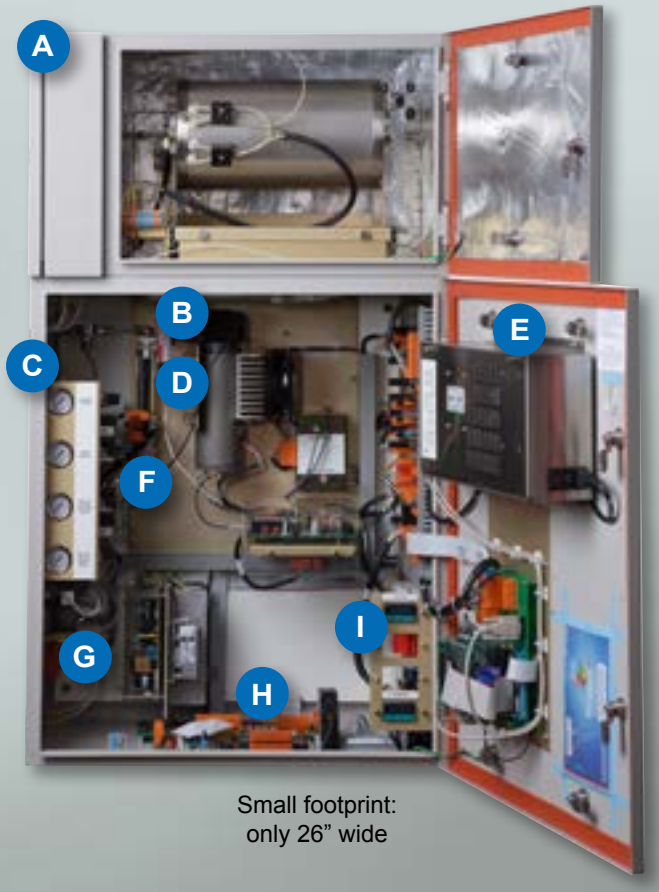
TOTAL NITROGEN ANALYSIS: MODEL 6200 N

Utilizing accuracy and precision of our chemiluminescence detection (CLND) technology, the 6200N delivers total nitrogen determinations from 250 ppb to percent levels, providing results in minutes. Chemiluminescence is a rapid method for determining total bound nitrogen in almost any liquid or gas.

$$R\text{-}N + O_2 \xrightarrow{1000^{\circ}C} NO + \text{combustion products}$$
$$NO + O_3 \rightarrow NO_2^* + O_2 \rightarrow NO_2 + O_2 + h\nu'$$

A fixed amount of sample is combusted at a high temperature to convert bound nitrogen into Nitric Oxide (NO) molecules. The NO molecules are then mixed with ozone, causing them to chemiluminesce. The light produced by this reaction is converted by a photomultiplier tube into a signal that is proportional to the amount of nitrogen present.

MODULAR DESIGN, ULTIMATE RELIABILITY!



Small footprint:
only 26” wide

DESIGNED FOR DEPENDABILITY & EASE OF USE

- **A** Highly reliable 6-port rotary injection valve is isolated from electronic components, yet easily accessible for routine maintenance
- **B** Membrane dryer thoroughly removes moisture before sample enters detector
- **C** Built-in pressure regulators ensure dependable flow of utility gases
- **D** Thermo-electric cooling of detector ensures stable readings
- **E** Computer control enables real-time on-screen view of analysis progress; touch-screen access to method, calibration, validation, alarm settings, & troubleshooting ; local storage of historical data; and advanced data export and communication functions; digital output control
- **F** Computer controlled electronic mass flow controllers ensure stable flow
- **G** Component modularity allows easy upgrade to dual stream analysis
- **H** Customer interface board provides easy connections for communication to plant DCS and/or remote workstation
- **I** Digital displays provide quick viewing of furnace and detector temperatures

ADVANCED PLANT DCS COMMUNICATION

6200 Series’ digital inputs/outputs enable remote instrument control and status monitoring. Concentration data transmits via scaled 4-20 mA outputs. Includes RS-232, RS-422, or RS-485 for Modbus RTU; Modbus TCP/IP & Ethernet available upon request.

TECHNOLOGY LINK TO YOUR LAB

The 6200 Series utilizes the same proven technology of ANTEK’s widely accepted laboratory analyzers. Many customers value using common methodology between their process and lab since it simplifies data correlation between the two locations.

CUSTOM SAMPLE CONDITIONING SYSTEMS

A sample conditioning system (SCS) is critical for reliable sulfur and nitrogen measurement. The SCS will remove contaminants and H_2O, regulate sample pressure, and control sample flow to ensure sample introduction under constant conditions. ANTEK supplies these optional systems and can custom design an SCS to optimize your analysis.

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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 CO_2.

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ORDERING INFORMATION

Model 6200NS Nitrogen and Sulfur analyzer is designed for rapid analysis of liquid or gas samples for simultaneous detection of total chemically bound nitrogen and total sulfur. The basic system is comprised of a detector and electronics enclosure along with a furnace enclosure. The 6200NS complies with ASTM D4629 (total Nitrogen Chemiluminescence in petroleum fuels), D5453 (Total Sulfur UV Fluorescence in petroleum fuels) and D6667(Total Volatile Sulfur In LPG). The analyzer can be ordered with just the sulfur detector as a Model 6200S, or with the nitrogen detector as a Model 6200N, or with a combination of both detectors installed as a Model 6200NS.

SPECIFICATIONS

Detection method	
	6200 S Sulfur: UV- Fluorescence (UVF) Spectrometry 6200 N Nitrogen: Chemiluminescence detection (CLND)
Method Compliance	
	6200 S Sulfur: ASTM D 5453, D6667 6200 N Nitrogen: ASTM D4629, DIN#38409, TEIL 27
Certifications / Area classifications	
	North America - CSA/UL, NEC Class 1 Division 1 Groups B, C & D, NEC Class 1 Division 2 Groups B, C & D ATEX - II 2 G EEx p ia IIC T4"
Performance	
	Analytical Range: 250 ppb (lower detection limit) to % levels Precision: within <1% of full scale, for most applications Linearity: <1% of full scale at >1ppm concentrations Analysis Time: 2 minutes; analyses over 1000 ppm may take longer Cycle Time: 2½ to 5 minutes, programmable
Communication Outputs	
	4–20 mA isolated at 750 Ω (standard) Discreet digital inputs and outputs for remote control and status indication RS-232, RS-422, RS-485 for Modbus RTU (standard) Modbus TCP/IP and Ethernet (optional)
Sampling	
	Injection valve, 2 or 5 µl sample volume; Sampling system available as recommended option
Gas Requirements	
	Carrier (argon, air or nitrogen*): 99.975%, 50 psig, 5–15 cc/min Instrument or Plant Air/Oxygen for combustion (application dependent): • Oxygen: 99.75%, 50 psig, 400 cc/min • Plant Air (purge): clean, dry, particle-free; 80–100 psig • Instrument Air: 80–100 psig, for injection valve operation and for pneumatic output to sample conditioning panel * Nitrogen cannot be used as carrier on a 6200 N Nitrogen system.
Electrical	
	115VAC-50/60 HZ 13A 1500W 230VAC-50/60 HZ 6.5A 1500W
Ambient Temperature	
	0 to 40ºC (32 to 104ºF); operation at the extremes of this temperature range may affect performance; please contact your Antek representative for details.Vortec cooler option available for temperatures > 100 deg. F
Dimensions & Weight	
	WxDxH: 660 x 483 x 1816 mm (26 x 19 x 71½ inches) 152 Kg (335 pounds)

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