



# NSure

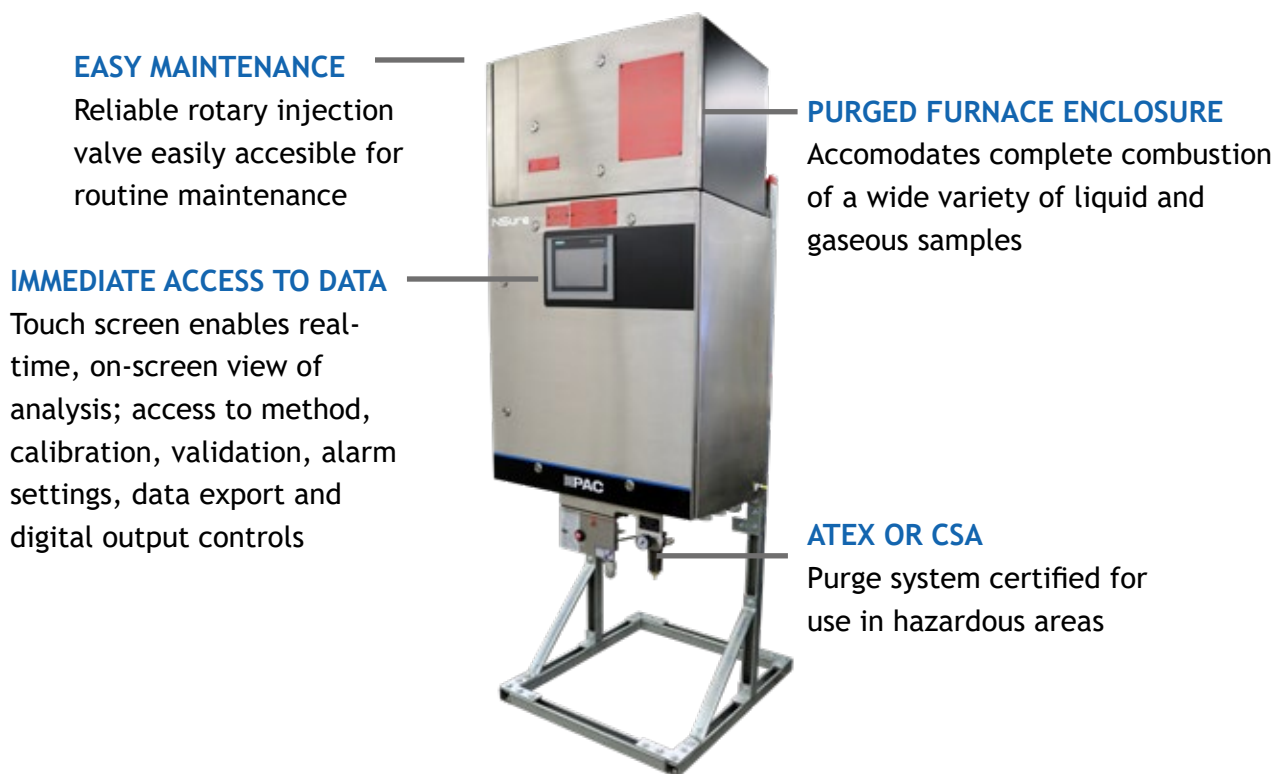
Determine Total Sulfur and Total Nitrogen in a Single Analyzer

- 🌐 Meet sulfur regulations and control your process with continuous measurements
- 🌐 Achieve precise measurements with correlation to primary test methods
- 🌐 Complete combustion of sample allows for fast response even in process
- 🌐 Innovative design can operate over a wide range and withstand process swings

## INNOVATIVE PROCESS SOLUTION FOR GAS, LPG, AND LIQUID SAMPLES UTILIZING PROVEN LAB TECHNOLOGY

With its large installed base, Antek by PAC has proven to be a global leader in lab and on-line elemental analysis instrumentation. Antek pioneered total sulfur and total nitrogen analysis utilizing pyro-fluorescence and pyro-chemiluminescence technology.

NSure, uses the same proven technology of its previous model –the 6200– to ensure lab accuracy with process robustness. By utilizing the same technology that labs use to qualify products, NSure enables plants to ensure regulatory compliance while operating as close to the upper limit to maximize profitability.



## LEADING TECHNOLOGY

The Antek UV-Flourescence (UVF) Spectrometry sulfur technology is a fast and accurate method, providing determinations down to 20 ppb and up to percent levels. For each measurement, a fixed sample is combusted at a high temperature to convert all sulfur into sulfur dioxide ( $\text{SO}_2$ ) molecules. The  $\text{SO}_2$  molecules are then exposed to ultraviolet light, causing them to fluoresce. The light emitted is measured and proportional to the amount of sulfur present. This method eliminates any matrix interference problems providing accurate results to very low level of sulfur.

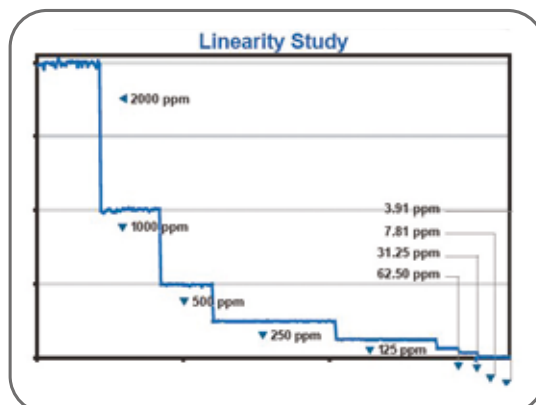
Nitrogen is measured utilizing the precision of the chemiluminescence detection (CLND) technology. NSure delivers total nitrogen determinations from 20 ppb to percent levels, providing results in minutes. A fixed amount of sample is combusted at a high temperature to convert the nitrogen molecules to nitric oxide (NO) molecules. The NO molecules are then mixed with ozone, causing them to chemiluminesce. Like the sulfur measurement, the light emitted is measured and proportional to the amount of nitrogen present.

# KEY ADVANTAGES

## MEET REGULATORY STANDARDS FOR NITROGEN AND SULFUR CONTENT

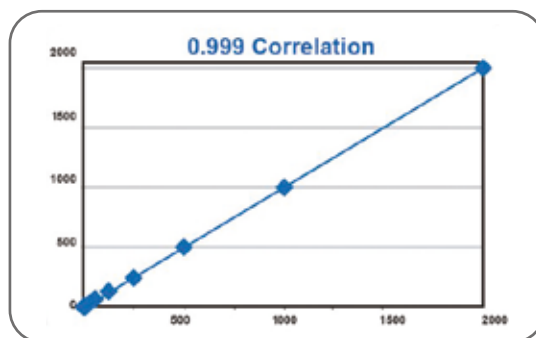
Measure Total Sulfur, Total Nitrogen, or both in a single analyzer

- Precise measurement of gas, liquid, and LPG products
- Direct injection system capable of measuring heavy gas/oil products
- Sensitivity from 20 ppb to % levels



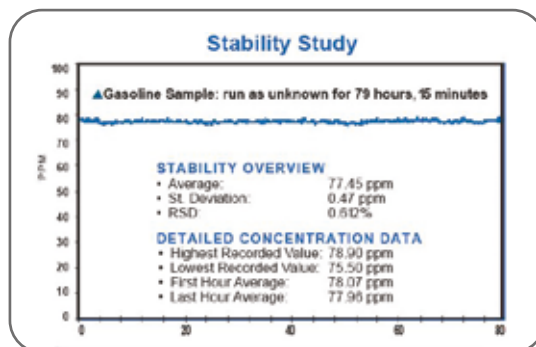
## PRODUCE LAB ACCURACY WITH PROCESS ROBUSTNESS

- Utilizing proven Antek technologies for precise results
- Correlates to ASTM D4629, D5453, D5176 and D6667
- Robust combustion system performs under various process conditions
- Proven technologies with instruments running 24/7 globally
- Customized sample conditioning systems available for your specific applications



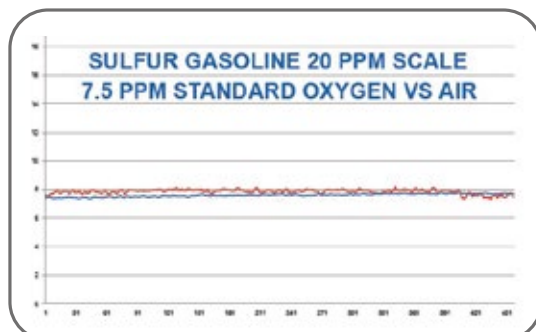
## OPTIMIZE THE PROCESS BY KEEPING CLOSE TO THE SPECIFICATION LIMITS

- Quick analysis in 1-5 minutes per stream
- Fast response time to process changes - no carry over from products
- Actual measurement displayed on screen for quick verification
- Enables process control by integration with plant DCS



## CONTROL MAINTENANCE COSTS

- Can use air or oxygen as the combustion gas, depending on the application
- New pyrotube design extends preventative maintenance efforts
- Reduced cycling intervals extends the life of the injection valve
- Built to withstand process disruptions, and recovers quickly for minimal downtime





## SPECIFICATIONS

|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Detection method                         | NSure Sulfur: UV- Fluorescence (UVF) Spectrometry<br>NSure Nitrogen: Chemiluminescence detection (CLND)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Method Correlation                       | NSure Sulfur: ASTM D5453, D6667, ISO 20846<br>NSure Nitrogen: ASTM D4629, DIN 38409, TEIL 27, ASTM D5176, EN 12225                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Certifications /<br>Area classifications | CSA/UL, NEC Class 1 Division 2 Groups A, B, C & D<br>ATEX: Zone 1 Ex db ib pxb IIC T4 Gb (T3 with heated valve)<br>Zone 2 Ex db nA pxb IIC T4 Gb (T3 with heated valve)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Performance                              | Analytical Range: ppb to % levels<br>Repeatability: within <1% of full scale, for most applications<br>Analysis Time: 2 minutes; analyses over 1000 ppm may take longer<br>Response Time: 1 to 5 minutes, programmable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Communication Outputs                    | 4-20 mA (4) range selectable<br>Discrete digital inputs and outputs for remote control and status indication<br>RS-485 for Modbus RTU (standard)<br>Modbus TCP/IP and Ethernet (standard)<br>Remote workstation (optional)                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Sampling                                 | Injection valve, 2 or 5 µl sample volume<br>Sampling system available as recommended option                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Supply & Connections                     | <ul style="list-style-type: none"><li>• <b>Carrier Gas:</b> Argon, instrument air* or nitrogen (99.975%) regulated to 50 psig at 1-15 cc/min (typical; application dependent)</li><li>• <b>Combustion Gas:</b> Instrument air* or oxygen O<sub>2</sub> (99.975%) regulated to 50 psig at 350-500 cc/min (typical; application dependent)</li><li>• <b>Valve &amp; Pneumatic Air Supply:</b> Clean, dry, particle-free air @ 80-100 psig (5.6 - 6.8 Bar)</li><li>• <b>Purge Air Supply:</b> Clean, dry, particle-free air at 80-120 psig (5.6 - 7 Bar); 425 LPM (15 SCFM) for startup and then 130 LPM (4.6 SCFM) for normal operation</li></ul> <p><i>*Instrument air: Clean, dry, particle-free</i></p> |
| Electrical                               | 115VAC 50/60 Hz 13A 230VAC 50/60 Hz 6.5A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Ambient Temperature                      | 0 to 40°C (32 to 104°F); operation at the extremes of this temperature range may affect performance; please contact your PAC representative for details. Vortec cooler option available for temperatures >100°F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Dimensions & Weight                      | W x D x H: 26 x 17 x 45 inches (66 x 43.2 x 114.3 cm) 400 pounds (181.4 Kg)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

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

## ABOUT PAC

PAC develops advanced instrumentation for lab and process applications based on strong **Analytical Expertise** that ensures **Optimal Performance** for our clients. Our analyzers help our clients meet complex industry challenges by providing a low cost of ownership, safe operation, high performance with fast, accurate, and actionable results, high uptime through reliable instrumentation, and compliance with standard methods.

Our solutions are from industry-leading brands: AC Analytical Controls, Advanced Sensors, Alcor, Antek, Herzog, ISL, Cambridge Viscosity, Phase Technology, and PetroSpec. We are committed to delivering superior and local customer service worldwide with 16 office locations and a network of over 50 distributors. PAC operates as a unit of Roper Technologies, Inc., a diversified technology company and a constituent of S&P 500, Fortune 1000, and Russell 1000 indices.

## HEADQUARTERS

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