Antaris IGS Gas Analyzer



Exceptional Multicomponent FT-IR Gas Analysis



Bulk Gas Purity Analysis



Specialty Gas



Combustion Emissions Monitoring and Air Bag Effluent Analysis



Environmental



Breathing Gas



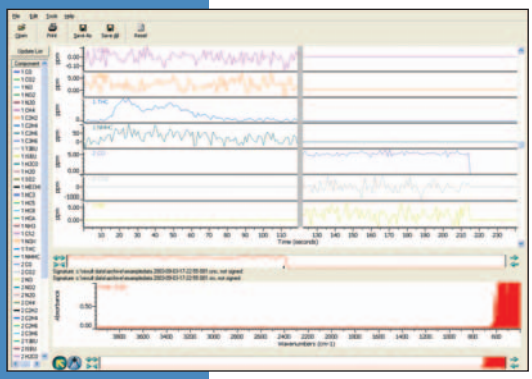
Semiconductor/Electronic Gas Suppliers

Intuitive Gas Analysis

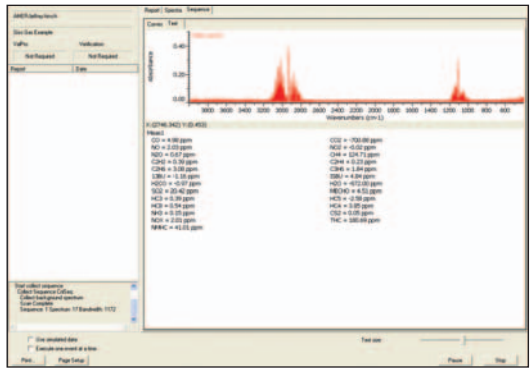
The operation of the Thermo Scientific Antaris™ IGS gas analyzer is accomplished with Thermo Scientific RESULT™ software, specifically designed for process applications and routine analysis on the manufacturing floor. The revolutionary design of this software provides easy-to-use tools for routine analysis, method development, method transfer, operation setup, and data analysis.

From Spectra to RESULTS: RESULT Analyzer Software

- Capable of collecting and analyzing spectra at 2 scans per second (2 Hertz data collect) at 0.5 cm^{-1} resolution
- Push-button operation requiring minimal operator training
- User operation defined by system login. Complete system security with user passwords, log-ins, and digital signatures
- Remote-start capabilities
- Real-time component quantitative results
- Run-time gas analysis interface allowing real-time display of control charts, multiple quantitative curves (concentration over time) and spectra
- Integrated operator Standard Operating Procedures (SOP's)
- Output of real-time results via OPC server for use by Manufacturing Execution Systems (MES)
- Software control of gas cell temperature, and monitoring of gas pressure
- Automatic archival of component concentration, spectra, interferograms, and gas analysis parameters
- Customizable reports
- Execution of multiple quantitative methods during a single analysis, an essential tool for some analyses, including combustion gases
- Powerful data analysis viewer for reviewing completed measurements. Review complete concentration curves and single or multiple groups of spectra



RESULT viewer interface



Operation run time gas analysis report

TQ Analyst Chemometric Gas Analysis Tool

Thermo Scientific TQ Analyst™ software delivers method development tools specifically suited to meet the demanding needs of gas analysis

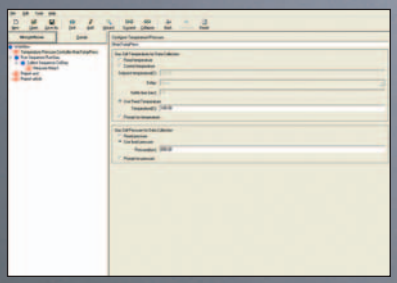
- Automated selection tools for method, region, pathlength, and standards
- Automatic import of existing Quant Pad and TQ Analyst methods
- Composite components – a unique feature providing the ability to produce a computed value from the concentration results, including multiple peaks calculations. This is useful to compute gas species such as the total NO_x value
- Interference components – provides the ability to ignore gas components that may introduce error due to interfering spectral bands
- Multiple spectral regions using common baseline
- Variety of pathlength, temperature, pressure, and baseline correction tools
- Diagnostic tools including Principle Component, Variance Spectrum, Pure Component Spectra, Correlation Spectra, and Cross Validation



Unparalleled High-Speed Gas Analysis Through Superior Spectrometer Design and Performance

Computer Automation

The Antaris IGS system provides powerful integration of hardware and software for intuitive operation, while guaranteeing complete, accurate analysis for every measurement. In addition to the automatic setting of collection and system parameters, the analyzer also provides monitoring of gas cell temperature and pressure. Gas cell temperature can be controlled by the software, as well as storing temperature and pressure information with archived spectra.



Automated Data Output

This analyzer is capable of transferring real-time results to a LIMS or PCS system using flexible output tools including Ethernet (OPC server) and a variety of industry standard protocols.



Automated System Qualification

With the ValPro™ system qualification package, the Antaris IGS analyzer incorporates an internal validation standards wheel to perform automated spectrometer tests as defined by the European and Japanese Pharmacopeia. The proprietary validation wheel contains all the NPL and NIST traceable standards necessary to perform wavelength accuracy, resolution, linearity, system noise and energy throughput tests. System performance verification and qualification is initiated with the push of a button. The unique dual beampath design eliminates the possibility of operator error and damage to the reference standards.



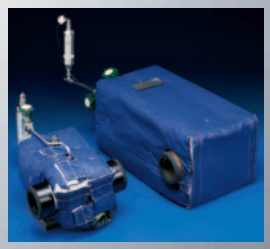
Industrial Spectrometer Gas Analysis System



The unique Antaris IGS analyzer is an FT-IR spectrometer designed for use in harsh, industrial environments. It provides a robust yet small footprint package for either rack-mount or table-top operation in at-line, near-line or on-line implementation. The system is compatible with industry-standard 19-inch racks.

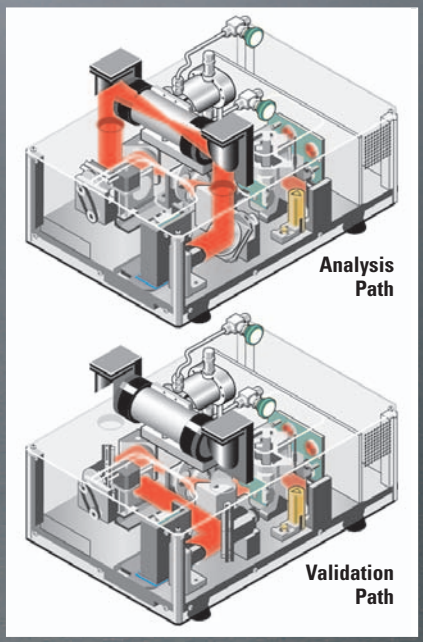
Open Sampling Architecture

The Antaris IGS analyzer is designed to accommodate a variety of gas cell options, while maintaining a compact system footprint. The analyzer can be configured with a wide range of gas cells for a variety of samples and concentrations for corrosive, caustic, heated, and ambient analysis.



Unique Dual Beampath Design

Ideal for system performance qualification, push-button automation allows operators to easily verify the system performance, independent of a gas cell and the calibration. This makes for easy trouble-shooting of potential failures. The unique industrial design also protects spectrometer components from harmful gases should a gas line or gas cell fail.



Method transferability is made possible by unparalleled stability, precision, accuracy, and reproducibility.

The Antaris IGS analyzer provides research-grade system performance in an industrial spectrometer.

To **reduce system-to-system spectrometer variability**, the analyzer is manufactured in a stringent ISO 9000 environment using manufacturing tests to ensure system-to-system matching. Each analyzer uses precision-based component layout with permanently aligned optics.

High-speed data acquisition at high spectral resolution for **real-time gas analysis**. Made possible by the Vectra™ interferometer, the Antaris IGS system continually monitors itself and provides "real-time" automatic optimization of the optical signal. The Vectra interferometer with dynamic alignment is also used in Nicolet research FT-IR spectrometers. It provides exceptional high resolution line shapes, superior long and short term stability, and high speed/high resolution data collection. This combination of speed and performance provides a system capable of collecting data at 2 scans per second at 0.5 cm^{-1} resolution, ideal for detailed analysis of rapidly changing complex gas mixtures.

The **dynamically aligned interferometer**, with pinned-in-place, pre-aligned components, ensures permanent optic alignment. With no instrumental variation introduced into spectral collections or calibrations, method transferability is ensured. In addition, method maintenance is virtually eliminated allowing for uninterrupted operation and analysis.

The Antaris IGS analyzer provides the lowest CoO available in a gas system. The system also provides a long MTBF (> 5 years). Time-tested, high quality components are used in the construction of the system. With over 25 years of experience as the leader in FT-IR instrumentation, our laser, interferometer, source, and optical components have a proven performance track record. In addition, easy user-replaceable consumables, such as the IR source, minimize down time with no impact on data analysis or results.

Error-free operation – RESULT software allows deployment of SOP-based analyses which guarantee error-free performance, ensuring measurements are conducted consistently from measurement-to-measurement and from site-to-site.

A Complete System for Gas Analysis

The Thermo Scientific Antaris IGS analyzer is a multi-component gas system capable of simultaneously analyzing over 100 gas species. Developed as an industrial Fourier Transform Infrared (FT-IR) system that can be deployed in either a rack-mount manufacturing environment or a table-top quality control area, the Antaris IGS provides the industry's highest possible performance in calibration and stability, method transferability, and high speed data acquisition.



Total Solution

The Antaris IGS gas analyzer was specifically developed to meet the needs of demanding gas applications. The analyzer's design and extensive support programs were developed with input from industry market leaders to offer a solution to your specific gas analysis needs. This analyzer is the first integrated gas analysis system to offer:

- Industrial rack-mount and table-top configurations
- Continuous quantitative analysis and visual display of gases in real-time
- High resolution research-grade system performance
- Integrated temperature control
- Intuitive, push-button operation
- System-to-system repeatability for method calibration transfer and simple method maintenance
- Powerful quantitative and qualitative capabilities
- Low Cost of Operation (CoO) – Greater than five year Mean Time Between Failure (MTBF)
- MES and Process Control System (PCS) support





Gas Analysis Capabilities

With our extensive offering of gas spectral libraries and our dedicated gas calibration lab, we offer the widest variety of industry-specific or custom gas applications. Our factory calibration lab can provide gasoline, diesel, or catalyst combustion calibrations, fire science calibrations, compressed air or aviator breathing gas calibrations, and air bag effluent calibrations. Our worldwide global support team can provide support for on-site custom gas calibrations, as well as installation of standard gas calibrations available from our factory.

Here's a partial list of components that can be analyzed by the Antaris IGS system.

Acetaldehyde	*1, 2-Dibromoethane*	*Methyl nitrite*
Acetone	*Dichlorodifluoromethanc*	*Nitric acid*
Acetylene	*Ethane*	*Nitric oxide*
Acrolein	*Ethanol*	*Nitrogen dioxide*
Ammonia	*Ethyl acetate*	*Nitrogen trifluoride*
Arsine	*Ethyl acrylate*	*Nitrous acid*
Benzene	*Ethylene*	*Nitrous oxide*
Boron trichloride	*Ethylene oxide*	*n-Pentane*
Boron trifluoride	*Formaldehyde*	*Phosgene*
Bromomethane	*Formic acid*	*Phosphine*
1, 3-Butadiene	*Furan*	*Propane*
Butane	*n-Hexane*	*Styrene*
Carbon dioxide	*Hydrogen bromide*	*Sulfur dioxide*
Carbon monoxide	*Hydrogen chloride*	*Sulfur hexafluoride*
Carbon tetrachloride	*Hydrogen cyanide*	*Silane*
Carbonyl sulfide	*Hydrogen fluoride*	*Silicon tetrachloride*
CFC 11	*Hydrogen sulfide*	*Toluene*
CFC 12	*Isobutanol*	*Trichloroethylene*
CFC 13	*Isobutylene*	*Vinyl bromide*
CFC 14	*Isopropanol*	*Vinyl chloride*
CFC 22	*Methane*	*Water*
CFC 113	*Methanol*	*m-Xylene*
Chlorodifluoromethane	*Methyl acrylate*	*o-Xylene*
Chloroethane	*Methyl amine*	*p-Xylene*
Chlorotrifluoromethane	*Methyl ethyl ketone*	
Diborane	*Methyl isobutyl ketone*	

Features and Benefits of Antaris IGS Analyzer

Feature	Benefits
Superior Performance – best stability, signal-to-noise, resolution and reproducibility on the market	Fast analysis, capable of collecting and analyzing spectra at 2 scans per second at 0.5 cm^{-1}; Spectral Range 6000 – 370 cm^{-1}; Continuous operation with reproducible and accurate results; Low CoO; MTBF > 5 years
Pinned-in-Place, Permanently Aligned Optica l Design	Method transferability; Instrument-to-instrument accuracy and reproducibility
Extensive Product and Application Support	Streamline your method development and validation; Industry and custom calibrations; On-site application development; Save time and money by shortening development
RESULT Analyzer Software	Push-button operation; Simultaneous quantitative analysis of more than 100 gases; Minimal operation training, integrated SOP's; MES and PCS support
TQ Analyst Chemometric Software for Method Development	Quantitative measurements: CLS, PLS, PCR, SMLR, Beer's Law Qualitative measurement including: QC compare, Search Standards, Similarity Match, Distance Match, Discriminant Analysis; Measure only mode: peak height, peak location, area, ratio, signal-to noise, center of gravity; Automatic method, region, pathlength, standard selection; Variety of pathlength and baseline correction tools; Diagnostic tools including Principle Components, Variance spectrum, Pure Component Spectra, Correlation Spectra, Cross Validation (RMSECV)
ValPro System Qualification Package and PQ Testing	Complete system performance verification including DQ, IQ, OQ; Designed in accordance with GLP and cGMP guidelines
Automated Validation Wheel with Traceable Standards	Automated performance verification that can be executed at any time; System verification with no possibility of operator error; Independent verification of spectrometer performance
Internal Calibration	No external calibration required; Instrument is precise to 0.01 cm^{-1}; No artifacts due to instrumental variations
Compact, Robust Design	Small industrial footprint: Length 62 cm (24.5 inches) x Width 43 cm (17 inches) x Height 45 cm (17.5 inches); 19 inch rack mount operation; Table-top operation; Operates in harsh, non-laboratory environments; Dual beampath design allows error-free verification of spectrometer and gas application without removal of gas cell
Vectra Interferometer	Time-tested, proven design that provides guaranteed, error-free operation for many years; Provides the highest performance in stability, accuracy and reproducibility
User-Replaceable, Pre-Aligned Source	Allows operators to quickly and easily change the source without changing analysis results or recalibrating the system; "No - tools" simplified parts replacement; Long lifetime source
Gas Cell Options	10 meter gas cell; 2 meter gas cell; Accommodates a wide variety of industry-available gas cells from 0.5 to 20 meters
Detector Options	TE cooled DTGS; Liquid nitrogen cooled MCT (24 hour hold time)

Antaris IGS Analyzer –
From the Market Leader in Fourier Transform Infrared (FT-IR) Spectroscopy

For over 25 years, Thermo Fisher Scientific has led the way in providing high performance, high quality molecular spectrometers. The Antaris IGS analyzer combines our expertise in FT-IR, FT-Raman, and FT-NIR spectroscopy with an innovative new design specifically developed as a dedicated gas analyzer. Extensive discussions with method developers and chemists in the gas industry have allowed us to develop an instrument that you can operate with complete confidence.

In addition to these offices, Thermo Fisher Scientific maintains a network of representative organizations throughout the world.

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