



GAS MEASUREMENT

Gas Chromatography

Flow & Pressure Measurement

Sulphur Analysis

Moisture Measurement

Infrared Analysis

UV Absorption Spectroscopy



LIQUIDS MEASUREMENT

Wet Chemistry

Turbidity

Suspended Solids

Color Monitoring

Viscosity

H₂S in Liquid Sulphur



PRODUCT FLOWCASE

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GAS

GAS MEASUREMENT

Gas Chromatography

- Heating Value
- Specific Gravity
- Component Concentrations

Flow & Pressure Measurement

- Electronic Volume Corrector
- Electronic Pressure Recorder
- Interval Data Recorder
- Electronic Recorder
- Alarm Pressure Recorder

Sulphur Analysis

- Lead Acetate Tape Analyzers
- Sulphur Chromatography
- UV Absorption Analyzers

Moisture Measurement

- Water Concentration
- Dewpoint Temperature

Infrared Analysis

- CO₂, CH₄, CO
- H₂S in Liquid Sulphur

CORPORATE PROFILE

Galvanic Applied Sciences Inc. designs, manufactures and markets a full line of analysis and measurement equipment for natural gas transmission, gas processing, oil refining, sulphur recovery and other process industries. The product line includes H₂S/total sulphur analyzers, a variety of gas chromatographs, sulphur species UV absorption spectrometers, infrared analyzers, moisture analyzers, gas volume correctors, gas pressure recorders, viscometers, colormetric analyzers, automatic titration analyzers, turbidity monitors, forward and side scatter optical suspended solids sensors and acoustic monitors. No matter what the application, Galvanic has the analytical and measurement device to fit the customer's gas or liquid need.

Galvanic Applied Sciences Inc. is a Calgary-based company, with sales and customer service reaching around the world. The company has support offices and operations in Alberta, Massachusetts, Texas, and Germany. We also support a distribution network of more than sixty loyal partners.

GAS Micro

The **GAS Micro** is a multifunction instrument designed to be configurable for applications such as an Electronic Volume Corrector (EVC), Electronic Pressure Recorder (EPR), Alarm Pressure Recorder (APR), Interval Data Recorder (IDR), and Electronic Recorder (ER).

- Flexible! Use as much or as little of the functionality as your application requires.
- Low power design.
- Simple and user-friendly configuration software.
- Extensive data logging capabilities.
- Modbus RTU Protocol support.
- Advanced remote communications and data collection solutions.



GAS Micro EVC (Electronic Volume Corrector)

Correct measured gas volume for the effects of live or fixed pressure, temperature, and super-compressibility (AGA7 and AGA8 calculations).

GAS Micro EPR (Electronic Pressure Recorder)

Measures and records values for up to 3 analog input channels at user-configurable wake-up intervals.

GAS Micro IDR (Interval Data Recorder)

Record and store interval meter readings for up to 3 discrete meters including natural gas, electric, and water. Ideal for utility load data studies and sub-metering applications.



GAS Micro ER (Electronic Recorder)

Configurable to measure and record up to 3 user configurable analog inputs and two discrete pulse inputs. Advanced alarm capabilities, ideal for mechanical chart replacement.

GAS Micro APR (Alarm Pressure Recorder)

Measures and records values for up to 3 analog input channels at user configurable wake-up intervals. Separate high-resolution alarm log triggered by user configurable alarm inputs and set points.

PLGC II GAS CHROMATOGRAPH

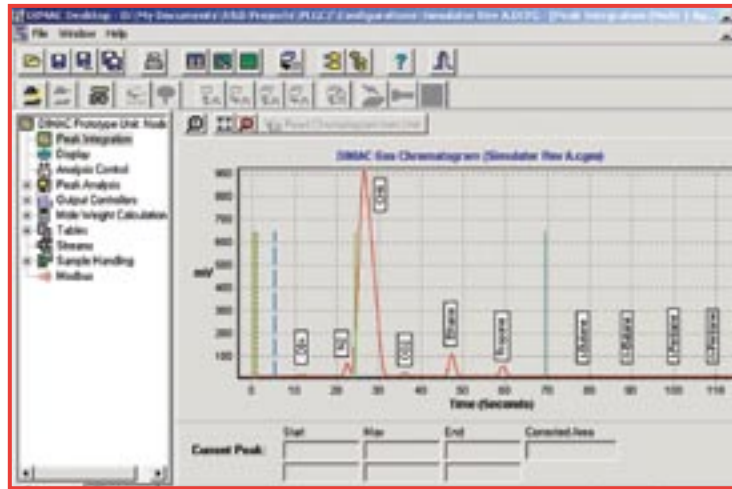


For pipeline and process applications

The PLGC II is a compact and low cost gas chromatograph equipped with a universal thermal conductivity detector. The unit offers a wide range of applications where hydrocarbon gas or fixed gas analysis is required, such as in BTU measurement for the natural gas industry.

The PLGC II is a fully automated system designed to perform on-line, real-time analysis. The Windows® based configuration software allows the user to view recent or saved chromatograms as well as configure the analyzer.

- 24 volt DC operation (optional 110/220 VAC)
- Division II electrical classification standard (Div I and Atex Zone II approved units are optional)
- Thermistor TCD detector
- No instrument air
- Low helium consumption
- Reliability
- Low maintenance
- Small, compact package
- 15 minute or 5 minute cycle times available



Gas Chromatogram

H₂S & TOTAL SULPHUR LEAD ACETATE



The lead acetate tape method for the detection of hydrogen sulphide (H₂S) and Total Sulphur in gaseous streams is based on the established principle that H₂S reacts specifically with lead acetate to form a brown lead sulphide stain. The concentration of H₂S is directly proportional to the rate of change of staining on the lead acetate tape. This principle is the basis for a number of ASTM methods, and is by far the most reliable and simplest way to measure H₂S in process.

The analyzer moves the treated paper tape one section at a time. Depending on the sample concentration, the tape will begin to darken at a rate proportional to the concentration of H₂S in the sample stream. The analyzer exposes a fresh section of tape to the sample inside the sample chamber every 3 minutes. GAS1 Analyzers are designed with the following in mind:

- Low maintenance
- Extended tape life
- Fast speed of response (under 20 sec. to alarm)
- Low power consumption
- Optional total sulphur measurement
- Multiple streams
- Auto calibration
- Remote communications

The lead acetate series of analyzers are third generation systems designed to meet increasing demands for low-level measurement in pipelines and process. The 6 models to choose from are the 801, 801W, 801WTS, 902 H₂S, 902 TS and 902 H₂S/TS.



801 H₂S Analyzer



902 H₂S / Total Sulphur Analyzer

UV ABSORPTION SPECTROSCOPY

The company's product line, specifically designed for the measurement of sulphur species gas from sulphur recovery and associated processes, is based on state-of-the-art UV absorption spectroscopy. Full spectrum analysis of the desired sulphur species gases is achieved through the use of a holographic grating spectrometer coupled with a 2048 pixel UV enhanced CCD array detector.

The analytical products based on this technology provide continuous, reliable output data for use in Process Control, Emission Monitoring, Process Efficiency Monitoring, and Sulphur Production Accounting. All of the products feature an intuitive graphical user interface.

The application product line includes:

- Tail Gas Ratio Control (Air Demand) Analyzer
- SO₂ CEM Systems (both concentration and mass based)
- Process H₂S Analyzer
- Process SO₂ Analyzer
- Sulphur Pit Vent Gas (H₂S / SO₂) Analyzer

All analyzers meet a variety of North American and European Electrical Code Classifications.

MODEL BRM-991 CEM SYSTEM



BRM-991 CEM

Brimstone's CEM systems are designed for Sulphur Recovery Plant applications requiring either a Mass SO₂ Emission or a SO₂ Concentration on a dry, O₂ corrected basis. Both types of systems feature our UV SO₂ analyzer and are complete with sample probe, sample conditioning unit and all other necessary application hardware. A Data Acquisition / Report Writing package is available as an option.

Features and Benefits include:

- Field proven and RATA compliant
- UV SO₂ analyzer with fibre optic light path
- Proven SO₂ analysis with large dynamic range capability
- Intuitive graphical user interface
- Complete system from one supplier
- Custom designed for users specific application
- Suitable for hazardous area installation
- Field proven reliability and low maintenance cost

MODEL BRM-961 H₂S PROCESS SYSTEM

The Model 961 is a field proven Process H₂S analyzer capable of analyzing concentrations up to 100%. Acid gas feed stream and intermediate process stream analysis are typical applications. Analytical method is the Brimstone UV spectrometer with no optical filters or moving parts. Systems are supplied with required sample probe and sample system.

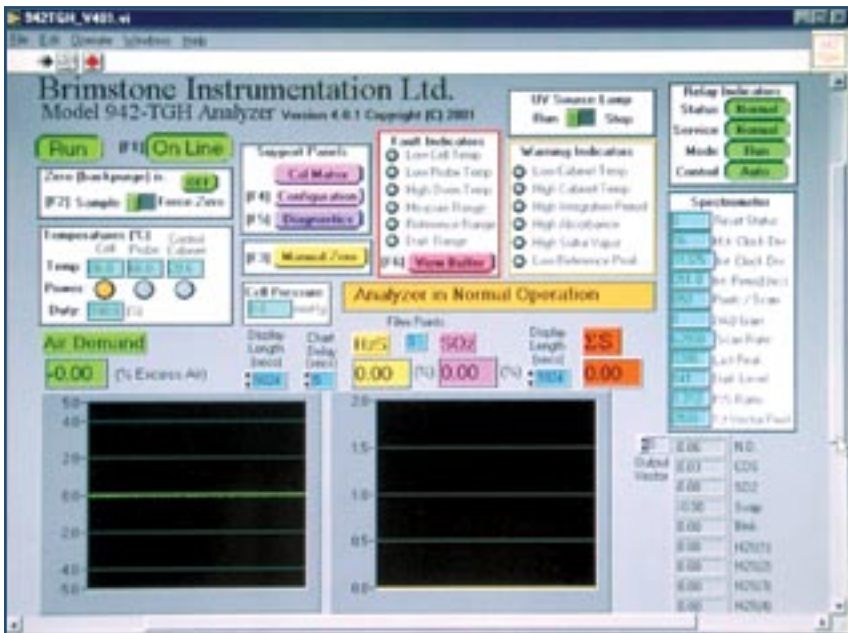
Features and Benefits include:

- Field proven reliability and low maintenance cost
- UV H₂S analyzer with fibre optic light path
- Complete system from one supplier
- No instrumentation house required
- Suitable for hazardous area installation
- Large dynamic range capability
- Intuitive graphical user interface



BRM-961 AGX

MODEL BRM-942TG TAIL GAS ANALYZER



Brimstone Model BRM-942TGH Graphical Interface

The sulphur plant tail gas analyzer utilizes the true spectral analysis of the sulphur species in the tail gas providing reliable, highly accurate analysis and outputs of the H_2S , SO_2 , COS (optional) concentrations and the Air Demand control signal.

Features and Benefits include:

- Direct connection to process line
- Fibre optic light path
- No optical filters and no moving parts
- Intuitive graphical user interface
- No analyzer house required
- Flexible installation for any process pipe configuration
- Suitable for hazardous area installation
- Field proven reliability and low maintenance cost

BRM-942 TGX



MODEL BRM-941 H2S IN LIQUID SULPHUR



BRM-941



H_2S and H_2SX concentrations in liquid sulphur can be analyzed for quickly and easily using this laboratory analyzer to confirm the efficiency of the sulphur pit de-gassing process and/or the quality of the marketed sulphur product. Today's sulphur buyers demand sulphur having low H_2S content.

WEASURMENT

842 SULPHUR GAS CHROMATOGRAPH



Sulphur Chemiluminescence Technology

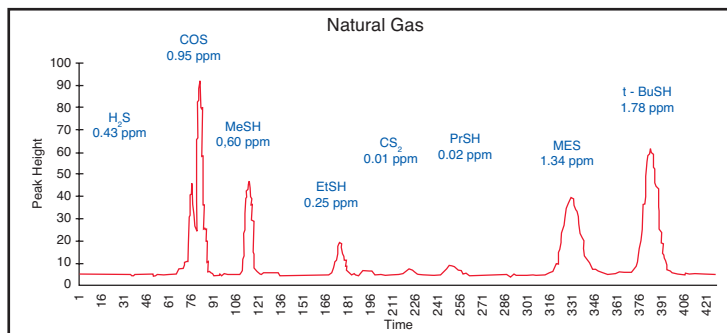
Galvanic Applied Sciences Inc. manufactures a complete line of "state of the art" analyzers for lab and process applications which employ sulphur chemi-luminescence technology to detect sulphur in a wide variety of hydrocarbon samples.

Some chemiluminescence applications:

- Pipeline natural gas and odorization systems
- LPG and LNG products
- Refinery and plant fuel gas
- Ethylene and propylene

The 842 Sulphur Gas Chromatograph is designed to measure sulphur species in gas streams. The 842 is capable of measuring up to 16 components plus total sulphur in up to eight streams. The 842 comes standard with an LCD display.

- Measure up to sixteen components in single stream applications



MP300 MOISTURE ANALYZER



Ideal for Natural Gas Applications

The MP300 uses a thermoset, polymer-based, capacitive sensor measuring relative saturation. As a result, a change in sensor capacitance is directly related to change in relative humidity. The MP300 sensor offers fast response and resistance to contamination from glycols, amines, and sulphurs. This makes the MP300 ideally suited for natural gas and instrument air applications.

- High accuracy
- Fast response time
- Sensor can be cleaned and put back into service
- Low system cost
- Field calibration
- Chemically resistant sensor

INFRARED CO₂, CH₄ AND CO ANALYZER



A Low Drift, High Accuracy Analyzer

Galvanic Applied Sciences Inc. now offers CO₂, CH₄ and CO measurement technology. The sensor is based on true dual wavelength infrared technology with no moving parts. The result is a low drift, high accuracy analyzer, with a fast response time and low power consumption.

- Low cost
- Accuracy
- Ease of use
- Reliability
- Specific

WEASURMENT

WET CHEMISTRY

LIQUID MEASUREMENT

Wet Chemistry Analyzers

- Colometric
- Ion Selective Electrode
- Titrations
- Spectrophotometric

Turbidity

- Forward Scatter Technique
- Side Scatter Technique

Suspended Solids

- Acoustic Measurement
- Optical Absorption

Color Monitoring

- Dual Wavelength Absorption

Viscosity

- Torsional Oscillation Technique

TYTRONICS

COLORMETRIC, TITRIMETRIC, ISE, AND SPECTROPHOTOMETRIC ANALYZER

Galvanic Applied Sciences USA manufactures the complete product line of Tytronics on-line wet chemical and gas analyzers. The Tytronics products include the **Sentinel and FPA series of On-line Analyzers**. These analyzers use "state of the art" technology to perform colorimetric, titrimetric, ISE, and spectrophotometric analyses. These analyzers can be configured to perform many EPA and ASTM wet chemical methods, as well as many standard methods. The Sentinel and FPA analyzers use a modular design that can be configured to meet the specific requirements of the customer's application.



SENTINEL ANALYZER

Multi-stream chemical analyzers capable of determining A (Aluminum) to Z (Zinc)

The **Sentinel Analyzer** is capable of both process chemical analysis and the monitoring of potable water and wastewater. This instrument can analyze up to six streams for the same chemical species, at different concentration ranges.



FPA SERIES ANALYZERS

Single Stream Process Analyzers

The **FPA Series Analyzers** are designed specifically for process applications in the chemical, petrochemical, and oil refining industries. The FPA Series includes analyzers with **flow-through cells for UV/Visible spectrophotometric measurements**. These analyzers have an intrinsically safe user interface keypad, which makes them well suited for applications located in hazardous areas.

Tytronics analyzers features:

- Patented sample capture system
- Multiple alarm functions
- Multi-stream analysis (Sentinel)
- Dual wavelength (optical analyzers)
- Intrinsically safe user interface (FPA)
- Auto calibration
- Low & high concentration analyses
- Auto cleaning
- Superior detector technologies
- Modular, reliable & rugged design

Tytronics applications include:

- Acidity
- Ammonia
- Hardness
- Nitrate
- Chlorine
- Sulphide
- Chromium
- Caustic & carbonate
- Aromatic hydrocarbons in water
- And many others
- Alkalinity
- Amines
- Iron
- Silica
- Copper
- Manganese
- Oil in water

NAMETRE

IN-LINE VISCOMETER

Nametre in-line viscometers employ a torsional oscillation measuring technique resulting in high precision and accuracy for a wide range of materials and process conditions. Nametre offers a variety of viscosity sensors and transmitters to monitor and control a wide range of applications. At the heart of our instrument is the no-moving-parts transducer, field proven in harsh process environments in the polymer, petrochemical, oil refining, asphalt, adhesives, foods and consumer products industries. Nametre offers sensors to meet customer specific viscosity, temperature and installation requirements.



Viscosity measurement from 0.1 cP to 1,000,000 cP

- No-moving-parts 316L SS construction
- Reliable in harsh environments
- Suitable for hazardous area installations
- Process temperatures from -40°C to 400°C
- Factory calibrated to NIST traceable standards
- Flexible installation in tanks or pipelines
- Viscosity of solutions, slurries, emulsions and dispersions

MONITEK

TURBIDITY, SUSPENDED SOLIDS & COLOR MONITORS

MESSENGER



Rugged, reliable monitors to control critical liquid processes

The **Monitek** product line consists of rugged and reliable monitors for in-line process turbidity, suspended solids and color. Our in-line sensors monitor in real-time, eliminating lag time and periodic sampling. Monitek monitors are installed in the chemical, petrochemical, oil & refinery, beer, food & beverage, biotech, and other markets. Monitek offers both Optical and Acoustical sensor technologies to meet our customer's monitoring requirements. The monitors are a two-component system consisting of a transmitter and a sensor. The Messenger Transmitter is used for all of our optical sensors and can be configured for multiple sensors and applications.

OPTICAL SENSORS

MoniTurb In-Line Turbidity Sensors

- Forward scatter and/or side scatter techniques
- Low range concentrations from 0.02 to 500ppm
- Filter breakthrough contamination alarm, process monitoring, quality control, chemical additives control applications
- Turbidity measurement is not affected by process color changes.

Monispec A Suspended Solids Sensors

- In-line sensors, submersible insertion probes and cell density probes
- Light absorption technique
- Solids concentrations up to 5%

Monispec AD In-Line Color Sensors

- Dual Wavelength Absorption
- ASTM, PAHP, Hazen and Saybolt color
- Color avoidance, removal and addition in liquids



ACOUSTIC MONITORS

Work where optical sensors fail

The in-line monitor utilizes a focused acoustic transducer that provides solids measurements independent of the liquid's color, opacity and density. These acoustic "particle" monitors are used in monitoring oil in water, opaque liquids, optically sensitive liquids and applications where fouling of optical sensors require excessive maintenance.



AT3 Transmitter
& AS3 Sensor



AS3 Sensor
& Ball Valve
Connection

Features of the Monitek Sensors and Transmitters include:

- In-line, real-time monitoring
- Compact modular optics
- Multi-sensor transmitter (Messenger)
- Alarm relays and diagnostics
- Factory & process calibration curves
- Linearization capabilities
- Superior accuracy & repeatability
- Rugged, reliable sensors
- Advantaged price/performance
- Reliable in harsh environments
- Suitable for hazardous area installations

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WEASURMENT

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