TURNKEY SOLUTIONS

ENVIRONMENTAL & PROCESS MONITORING

30 YEARS IN BUSINESS



ISO 9001 Certified

VCA

AAVOS

Environmental & Process analysers

AAVOS
Environmental & Process analysers

MISSION STATEMENT

Three decades of excellence do not materialize spontaneously; they reflect dedication and continuous efforts towards improvement for our valued customers. It entails constant self-reflection and proactive responsiveness to the evolving dynamics of the market.

We provide our clients with a comprehensive array of integrated measurement technologies and services, ensuring the perpetual accuracy of their data and the optimal functionality of their equipment. We empower industries, government bodies, researchers, scientists, and communities alike.


Industries


Nuclear


Energy


Construction


Scientific


Transport


Health


Government

AAVOS International. BV

ENVIRONMENTAL ANALYSERS

AAVOS
Environmental & Process analysers

We don't just offer a variety of services and products. Our aim goes beyond providing equipment—it's about crafting solutions for our customers' environmental challenges.



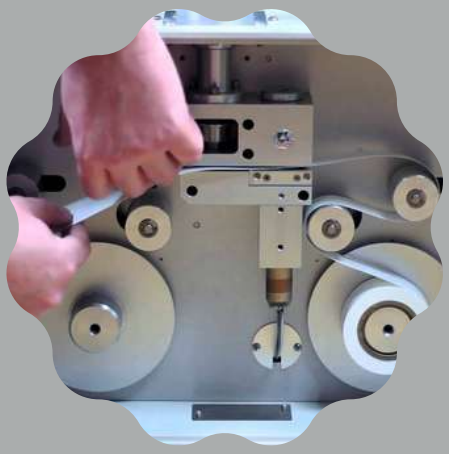
CEMS



Air Samplers



Gas analysers



Dust monitors



Particle monitors



Noise & Vibration



Aerosols-Black Carbon



Meteorological



Integrated systems

CONTINUOUS EMISSIONS MONITORING SYSTEM

A Continuous Emission Monitoring (CEM) system is implemented to optimize plant operations & ensure compliance with environmental regulations.

Stack Gas monitor

The stack gas analyser is crafted for the continuous measurement of nitrogen oxides (NOx), sulfur dioxide (SO2), carbon monoxide (CO), carbon dioxide (CO2), oxygen (O2), and ammonia (NH3) concentrations in stack flue gas streams.



CEMS

This CEMS is a comprehensive system designed to measure flow, dust, and the concentration of air pollutants (such as SO2, NOx, CO, CO2, THC, O2, etc.), along with other parameters. This measurement aligns with the relevant regulations governing the emission source.



Portable Analyser

The PG-300 series gas analyser is a lightweight device measuring up to five gases simultaneously, including greenhouse gases for research and emission monitoring. With enhanced durability features, it is suitable for various applications such as environmental studies, stack emission testing, and process gas control.



INDUSTRIAL EMISSIONS

We provide tools for sampling and measuring industrial emissions and air quality. Our product range includes a diverse selection of atmospheric air samplers, analysers, and accessories for sampling and analysis.

Sampling Probes

Our extensive selection of sampling probes is adaptable to any industrial emission, accommodating various gas compositions. Customized solutions provide alternatives to standard products for specific needs.



Constant Flow & Isokinetic Sampler

We provide automatic portable steady flow samplers, isokinetic samplers, and dioxins samplers, offering complete flexibility for sampling stack gas emissions, outdoor air, and indoor air quality (IAQ). Our instruments ensure high accuracy and stable flow measurements.



Cooling, condensing devices

When sampling stack gas, a cooler is often used to lower the temperature of the gas before it enters the sampling system: Condensation Prevention, Chemical Stability, Instrument Protection. In essence, a cooler in stack gas sampling systems is a tool to ensure that the gas remains in a suitable state for accurate and reliable analysis.



GAS ANALYSERS

We offer a range of monitoring stations, cabinets, calibration equipment, and supporting components to address diverse and challenging monitoring needs.

Our advanced technology and extensive experience in trace concentration gas analysis enable high-precision continuous analysis at the nano-level (ppb to ppm). We provide a comprehensive selection of analysers, each employing the optimal measurement principle tailored to the type of gas being measured, ensuring a solution for a wide array of applications.

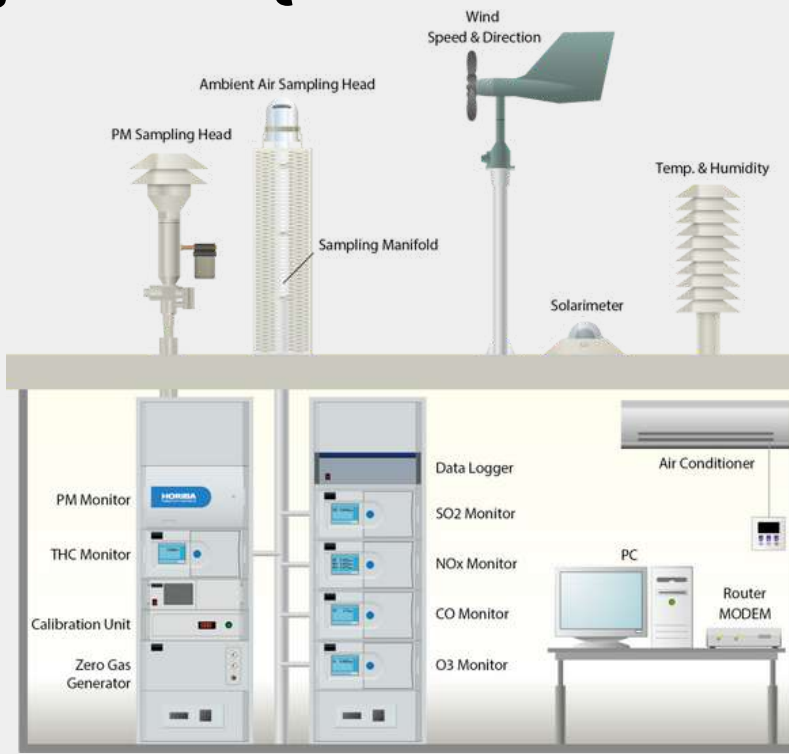
Our Analysers



- Ambient Carbon Dioxide
- THC
- Ambient Carbon Monoxide
- Ambient NOx
- Ammonia
- Ambient Ozone
- Ambient Sulfur Dioxide
- Ambient Hydrogen Sulfide

Calibrators - Data Management - AQMS

An Air Quality Monitoring Station (AQMS) is a comprehensive system designed to gauge meteorological factors like wind speed, wind direction, rainfall, radiation, temperature, barometric pressure, and ambient conditions. The AQMS incorporates an array of ambient analysers for continuous monitoring of air pollutant concentrations (including SO2, NOx, CO, O3, THC, PM, etc.). Additionally, we offer mobile monitoring stations for versatile monitoring of ambient conditions across multiple locations.



DUST & PARTICULATE MONITORS

AAVOS Int. provides an extensive range of ambient particulate monitors and samplers. Ambient particulate monitors sample, measure, and record the concentration of ambient particulate matter (TSP, PM10, PM2.5, or PM10-2.5). Conversely, ambient particulate samplers collect and deposit ambient particulate matter onto pre-weighed filters for subsequent gravimetric or speciation analysis in a laboratory (TSP, PM10, PM2.5, or PM10-2.5).

Our beta attenuation mass monitors are globally utilized for applications demanding the utmost accuracy and precision.



Beta Attenuation Mass Monitors

Our beta attenuation mass monitors (BAMs) find global application in scenarios demanding unparalleled accuracy and precision. Our flagship holds certifications in the United States, Europe, China, Korea, and Taiwan, with over 15,000 monitors sold to date.

Continuous Particulate Monitor with X-ray Fluorescence



Continuous elemental and particulate mass analysis with automated sampling

The increasing concern about particulate matter (PM) pollution and its impact on health necessitates effective preventive measures. Determining the concentration of PM from its sources is crucial for proactive action. Hence, it is vital to have indicators of PM and elemental concentrations. The PX-375 analyser utilizes automated sampling, enabling continuous online quantitative and qualitative analysis of PM for swift air pollution measurements.

NOISE & VIBRATION MONITORING

Safeguarding individuals, communities, and both the built and natural environment from undue noise and vibration.

Noise and vibration monitoring station

Integrated multiparameter noise and vibration monitoring stations that measure, record, process, store and transmit real-time data



Acoustic cameras

Powerful, versatile and flexible, the Noise Inspector range is at the forefront of technological innovation in the field of sound source localization. With great ease of system setting up, sound and vibration emissions becomes quickly visible.



Sound level meters

A sound level meter or sonometer is an important tool for both environmental acoustic monitoring as well as building acoustics projects.



Noise and vibration softwares

Software for noise and vibration, offering features such as outdoor and indoor noise prediction, noise exposure analysis, data acquisition, vibration exposure, data processing, building acoustics solutions, and more.



Aerosol Magee Scientific is a brand with a scientifically proven approach to the measurement and research of carbonaceous aerosols. Our instruments have provided data for nearly 8,000 published scientific papers and reports.

Black Carbon Analysers

Aerosol Magee Scientific instruments are considered to be the most reliable instruments for the measurement and research of Black Carbon, Brown Carbon, Organic and Elemental Carbon, Total Carbon, Primary and Secondary Organic aerosols and other carbonaceous aerosols.



Nephelometers

The Aurora Nephelometer is part of the ‘new generation’ nephelometers using a single wavelength and an BETA monitor to measure aerosol light scattering and derive particulate concentrations.



CARBONACEOUS AEROSOL SPECIATION SYSTEM

The Aerosol Magee Scientific Carbonaceous Aerosol Speciation System CASS, is a combined unit of a Total Carbon analyser TCA08 and an Aethalometer AE33 providing a revolutionary scientific OC/EC analyser that measures the Total Carbon Content(TC), the Elemental Carbon content(EC), the Organic Carbon content (OC) and the Black Carbon content (BC) of suspended aerosol particles in near-real Time.



METEOROLOGICAL

Meteorology is the origin and purpose behind the name Met One Instruments. Initially established as a company specializing in meteorological instruments. Our meteorological products not only endure harsh outdoor environments but are also designed for easy installation and long-term durability. Met One provides an extensive range of meteorological sensors and systems, catering to the measurement of atmospheric and local weather conditions across a diverse array of applications.

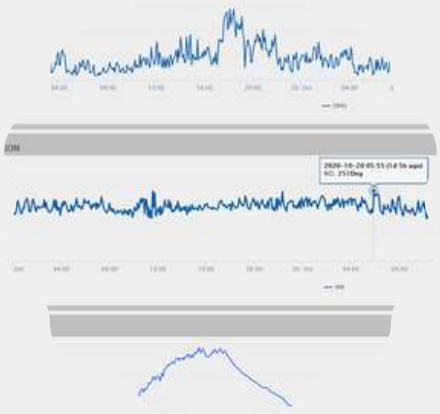
Weather Sensor Technology

Our time-tested, reliable weather sensors serve meteorological monitoring needs throughout the world, in the face of torrential rain, snow and ice, extreme heat and drought, and every kind of weather nature manifests. For measuring wind, temperature, relative humidity, rainfall, solar radiation, atmospheric pressure, and visibility



Location Specific Atmospheric & Weather Conditions

Met One Instruments offers four standard packaged meteorological systems to measure atmospheric and local weather conditions, including the General Purpose Weather Station, the Industrial Weather Station, the Rapid Response Weather Station, and the Air Quality Weather Station.



TUNNEL SENSORS

We design and manufacture our own analysers specifically for pollution monitoring in the traffic tunnel environment. Our analysers are designed to be combined in a modular fashion, offering the flexibility to create monitoring systems specifically adapted to the requirements of individual tunnels.

Our range:



- **Tunnel visibility monitors**
- **Tunnel airflow monitors**
- **Tunnel gas monitors**
- **Tunnel luminance monitors**
- **Tunnel illuminance monitors**
- **Tunnel monitors accessories**

Superior road tunnel monitoring solutions

As populations grow and urban infrastructure becomes more congested, planners are increasingly using underground road tunnels for smart city expansion. Accurate monitoring of atmospheric conditions in tunnels using reliable sensors is vital for safety, regulatory compliance, and the longevity of the asset.





INDOOR AIR & CLEANROOMS

Our handheld and bench-top units are ideal for clean room applications within ISO 14644-1:2015 Class 3-9. These devices can easily integrate into existing facility software and building automation systems, ensuring the utmost data integrity.

Aerocet 380

Portable Dust Monitor





Aerocet 831

Handheld Dust Monitor

BT-620

BENCH-TOP PARTICLE
COUNTER - 6 CHANNEL





DR-528

HANDHELD PARTICLE
COUNTER - 8 CHANNEL

GREENHOUSE GAS MEASUREMENT

Greenhouse gases (GHG), recognized as contributors to global warming, encompass carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), and fluorinated gases.



Sewage Treatment Facilities



Waste Treatment Plants



Chemical Plants



Research & Development

For On-site Continuous Monitoring

Stack-Gas analyser
ENDA-5000 Series

- Simultaneous measurement of up to five components including GHGs
- (NOx, SO2, CO, CO2, O2, N2O, CH4)





Portable Gas analyser PG-344

- Compact, lightweight and portable
- On-site and lab measurement available
- Simultaneous measurement of four components (N2O, CH4, CO2, O2)

Trace Greenhouse Gas & Isotope analyser

Simultaneous & real-time measurement of CO2 (incl. δ13C & δ18O), CH4, N2O & CO. As the only multispecies greenhouse and other atmospheric trace gas and isotope analyser based on Fourier Transform Infrared (FTIR) spectroscopy.



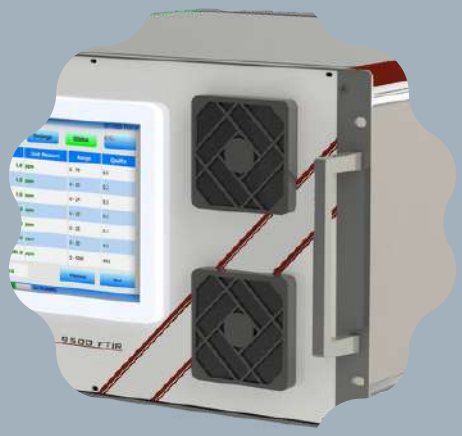
ONLINE PROCESS ANALYSERS

AAVOS Environmental & Process analysers

We offer a diverse selection of online process instrumentation tailored to various needs within the chemical, petrochemical, oil, gas, food, beverage, and pharmaceutical industries.



RAMAN



NIR & FT(N)IR



FT(N)IR OIL & GAS



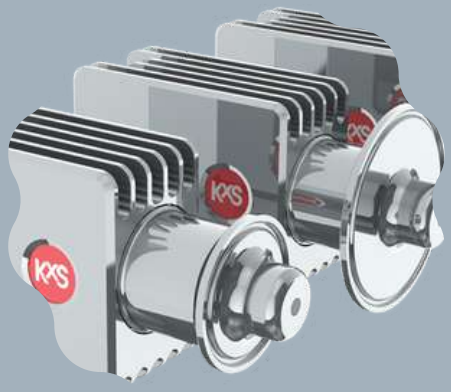
MASS SPECTROMETERS



TDLAS - QCL



UV-VIS Spectroscopy



DENSITY & CONCENTRATION



PAPER TAPE



PHYSICAL PROPERTIES

RAMAN SPECTROSCOPY

Raman spectroscopy is a highly selective and non-destructive optical spectroscopy technique which relies on the inelastic scattering of laser light to probe molecular structure in solids, liquids and gasses. Raman spectroscopy is often used in aqueous solutions, where FT(N)IR can not be used due to the interfering water bands.
What's unique about our technology is that the Tornado Raman Spectrometers use a proprietary HTVS™ enabled spectrometer to deliver better Raman sensitivity than ever before possible, designed to provide users with faster measurements (10x to 30x) for better process responsivity, better sensitivity for lower detection limits (ATEX hazardous area's), and permitting reduction of the laser power without sacrificing performance.

We supply turnkey solutions. There is a complete choice of lab or process analysers, multiplexers, fibers (up to 100 meters and longer), non contact -, immersion-, flow cell- and custom probes, software solutions and communication protocols.

Applications in:

- Pharmaceutical industry (up and downstream)
- Oil and gas
- Bio Processing
- Plastic and Polymers
- Chemical industry





Also available in a handheld format for law enforcement agencies and the pharmaceutical industry to detect narcotics, hazardous products, incoming and outgoing chemical products.



The NIR and FT(N)IR process analyser spectrometers are versatile and reliable instruments that offers many advanced features for process analysis and control applications. One of the best features of this instrument is its ability to perform real-time, non-destructive analysis of process streams, allowing for accurate and efficient monitoring of critical process parameters. This spectrometer delivers a high level of accuracy and precision.

The GUIDED WAVE™ NIR-O™ process analyser

The GUIDED WAVE™ NIR-O™ process analyser (spectrometer) offers remote multichannel extended range near-infrared (1000-2100 nm) spectroscopic analysis. NIR-O provides excellent signal-to-noise ratio, wavelength stability, NIST traceable wavelength calibration, dual beam optics and built-in diagnostics.





ETG 9500 FTIR gas analysers

ETG Risorse e Tecnologia has developed a high-resolution FTIR gas spectrometer. It offers high signal transmission capacity, low level of interference and extended component life. Thanks to the Fourier Transform IR Spectroscopy (FTIR) technique, the ETG 9500 analysers make their versatility their strength.
ETG 9500 FTIR gas analysers are available in all formats: Wall-Mounted, Rack 19″ and portable

FT(N)IR IN REFINERIES AND PETROCHEMICAL SECTOR

NEXT-GENERATION FTIR FT-NIR PROCESS AND LAB analysers
Using a broad spectral region from the near-infrared to the mid-infrared, our ANALECT® Series of FTIR FT-NIR Process and Lab analysers measure physical and chemical properties of liquids, solids and gases.
The process proven ANALECT Transept™ Interferometer provides superior performance for complex refinery applications such as fuels blending and component streams applications for polymers, petrochemicals, chemicals, pharmaceuticals in addition to general manufacturing.



REFINIR™

ANALECT® Fully Integrated Laboratory Autosampler & FTIR Instrument Designed To Analyze Heavy & Light Hydrocarbons Including Crude Oil & Gasoline

HYDROCARBON SMART SYSTEM™

ANALECT® On-Line, Real-Time FTIR Monitoring of Refinery & Petrochemical Process Streams in Hazardous Areas



FT(N)IR IN REFINERIES AND PETROCHEMICAL SECTOR

DIAMOND 20™

ANALECT® FTIR/NIR analyser for Operation in Rugged At-Line Environments and on the Laboratory Bench. Uses the same measuring core as the RefinIR and the HSS for easy model transferability.





IRmadillo by KEIT

Measuring chemical reactions in manufacturing environments can be difficult and costly. With the IRmadillo, a compact and tough in-line FTIR spectrometer from Keit, you can get powerful real-time analysis right at the point of production - saving you time and money. The IRmadillo has no moving parts. Keit now allows manufacturing industries to benefit from a robust, process-FTIR spectrometer in the continuous analysis of liquids.

The IRmadillo is equipped with a soplid probe with a diamond ATR tip that can withstand pH from 0 - 14 and temperatures of -20°C up to 220°C in hazardous environments.

MASS SPECTROMETERS

The real-time EXTREL™ quadrupole mass spectrometers and MGA™ fixed magnetic sector analysers are built for the demands of the gas and ion analysis for industrial and high purity process control, environmental monitoring, and cutting-edge laboratory & research. The mass spectrometers offer high sensitivity and a wide dynamic measurement range (ppb to %) for full, speciated composition. Both, quadrupole and fixed magnetic mass spectrometers, are commonly used in laboratory and pharmaceutical industries for a wide range of applications.



Quadrupole mass spectrometers

Quadrupole mass spectrometers are highly versatile and can be used for a wide range of applications, including identifying and quantifying compounds in complex mixtures, measuring isotopic ratios, and monitoring reaction kinetics.

Fixed magnetic mass spectrometers



Fixed magnetic mass spectrometers (MGA 1200CS) , on the other hand, use a magnetic field to separate ions based on their mass-to-charge ratio. They are often used in high-throughput applications, such as drug discovery and development, where fast and accurate analysis of large numbers of samples is required. They are also used for isotopic analysis and the characterization of small molecules. This MS analyser has a lot of applications in Ammonia, Biotech/Pharmaceuticals, Ethylene Oxide, Ethylene Cracking and Steel Processing

LASER GAS ANALYSERS : TDLAS, QCL, PAS, CRDS

Laser spectroscopies of various types have proven to be powerful tools in many scientific fields. Laser spectroscopy is a versatile diagnostic tool for analytical applications and recent advances in semiconductor laser technology combined with selective and sensitive spectroscopic detection techniques have led to the development of new diagnostic tools for trace gas and isotope analysis. Optical and Photoacoustic gas analysers provide high time resolution, high accuracy and precision, and can overcome limitations of more conventional instrumentation (such as mass spectrometry) relating to robustness, portability, cost of acquisition and ownership, and commercial availability.

TDLAS

Thanks to tunable diode laser (spectroscopy) (TDL), the ETG 6900 series analysers can use very narrow bandwidths, in the order of 0.1nm. The resolution is thus significantly higher than other technologies. ETG analysers can selectively detect specific compounds with minimal interference, even in low concentrations (ppm), continuously and real-time. Ideal for greenhouse and environmental monitoring and the measurement of industrial emissions (CO2, NH3, HCL, ...).





PLGA-1000

QCL technology for Ethylene cracker plants
The PLGA-1000 of HORIBA uses proprietary technology (QCL and IRLAM) to measure low concentrations of acetylene (C2H2) and carbon dioxide (CO2) contained as impurities in high concentration methane (CH4) and ethane (C2H6) which are material gases, continuously at high speed and with high sensitivity. This analyser has a significant lower operation cost than process GC's for this kind of application.

LASER GAS ANALYSERS : TDLAS, QCL, PAS, CRDS



PAS (PhotoAcoustic Spectroscopy)

Trace gas analysis is a crucial process in various industries, where the ability to accurately measure specific compounds in low concentrations is essential. ETG Risorse e Tecnologia has developed an innovative solution for this purpose with their ETG 8900 QEPAS series. These analysers utilize Quartz Enhanced PhotoAcoustic Spectroscopy (QEPAS) technology, which has seen significant advancements in recent years.

CRDS for high-purity gas analysis

The TIGER OPTICS™ Cavity Ring-Down Spectroscopy (CRDS) gas analysers have a long history in industrial gas, medical gas, and chemical processing enabling detection of moisture and other rogue impurities in process gas streams, including inert, reactive, corrosive, bulk and specialty gases up to PPT level.



UV-VIS SPECTROSCOPY

Aavos Int. supplies and services an extensive range of process and lab UV or UV- VIS analysers that can be used in the following industries:

Chemical production - Petrochemicals - Refining - Biofuels - Pharmaceutical - manufacturing - Food and beverage production - Polymer production - Environmental monitoring and testing - Cem's, online gas analysers - Online water analysis

GUIDED WAVE 508 UV-VIS™ Full Spectrum Process

Our GUIDED WAVE™ 508 UV-VIS™ Full Spectrum Process analyser is a single or multi-channel, fiber optic, UV-VIS spectrometer system designed for use in process environments.





CEM500 online gas analyser

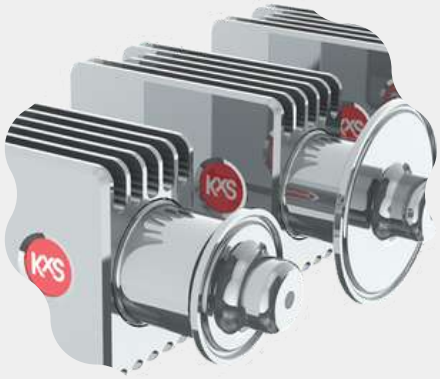
The CEM500 is an extractive online gas analyser dedicated to Continuous Emission Monitoring. This new model is based on a 2048 pixels CCD (charge-coupled device) giving a higher resolution (0.1 nm) and a longer lamp life time (3 years).

UV500 on-line water analyser

The UV500 is a on-line water analyser based on a high resolution UV-visible spectrograph. It allows to monitor simultaneously many different parameters for waste water treatment plants or river monitoring stations with an excellent stability and low operating cost.



DENSITY AND CONCENTRATION MEASUREMENT



KxS DCM-20 refractometer

Refractometers are used in a variety of applications: From the determination of the purity, quality and concentration of ingredients of medications to the measurement of the sugar content of food and beverages and the analysis of petroleum oil.

Rhosonics SLURRY DENSITY METER

The non-nuclear Slurry Density Meter is suitable for real-time density measurement in all kinds of slurries. The product uses sustainable ultrasonic technology and is specifically designed for dredging and mineral processing applications.



Rhosonics CHEMICAL DENSITY METER



The CDM offers real-time information about multiple parameters of liquids or slurries. It is used for in-line measurement of TSS (Total Suspended Solids), TDS (Total Dissolved Solids) and density.

CHEMICAL CONCENTRATION METER

The Rhosonics CCM (Chemical Concentration Meter) accurately measures chemical concentrations in real-time and designed to withstand harsh conditions.



PAPERTAPE FOR SULPHUR COMPOUNDS

The papertape product line consists mainly of a range of on-line process analysers, specifically designed to measure sulphur compounds in a process gas or liquid stream.
These analysers have a wide range from low pbb to % level and typically have no interference from other components. They can be used in hazardous area's.

DUALSULF™ H_2S/TOTAL SULPHUR ANALYSER



Measures H2S and total sulphur in process gas streams
0-250ppb to 0-2000ppm
Suitable for onshore and offshore applications

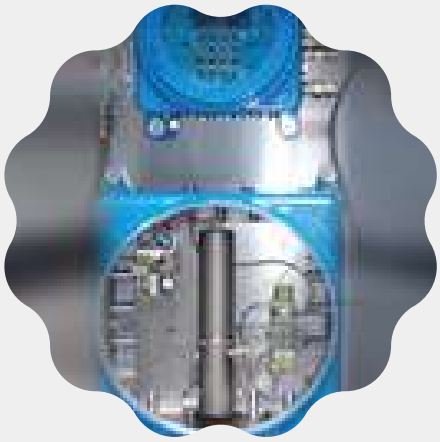


NOVASULF H2S II™ HG500 series

Only measures H2S in process gas streams
Fully configurable between 0-50ppb to 0-100%
Dual ranges possibilities
Suitable for onshore and offshore applications

NOVASULF™ TG500 Series Total Sulphur Analysers

Measurement specific to total sulphur
Ranges between 0-250ppb to 0-2000ppm
Suitable for onshore and offshore applications



Liquid analysers

NOVASULF™ H2S II HL500 series

Fully configurable between 0-2ppm to 0-1%
Measures H2S in most liquid hydrocarbons, including crude oil.





WATERSULF™ SERIES

The measurement of dissolved sulphides in water up to pH 8.5.
Measuring ranges: 0.01-3 or 0.05-10 or 0.5-50 mg/l (or in ppm).

PHYSICAL PROPERTIES FOR REFINERIES

AAVOS Int. distributes and services the physical property analyser of ATAC. Amongst others ATAC produce the following monitors for refineries:

The Hallikainen Model 7613 Colour Monitor



This model is a completely automated process stream analyser. Its quick and simple maintenance requirements combined with fibre optic technology to improve precision put the 7613 at the forefront for your colour monitoring needs.

Vapour Pressure

The ATAC Model 1354 is a completely automatic Vapour Pressure Analyser for measuring the Reid Vapour Pressure (the vapour pressure exerted by a liquid at 100° F/37.8°C) for a wide range of refinery streams.



Viscosity Analyser



ATAC offers the most versatile range available. ATAC is the only manufacturer to offer a process viscometer to measure very high viscosity fluids including those that behave in both a Newtonian (model 1077) and non Newtonian way (models 491 and 421).

TURN-KEY SOLUTIONS

Manufacturing

We specialize in crafting, constructing, and launching comprehensive solutions tailored to our clients' needs. While our primary focus is within the Benelux region, our analysers and sample systems operate in diverse locations worldwide, including the Amazonian forest, Antarctica, African Jungle, airplanes, marine vessels, and military installations.

Our clientele spans a broad spectrum, ranging from governmental bodies and research institutions to universities, communities, private organizations, and various industries.

Operations and Maintenance

AAVOS International BV provides a variety of monitoring and analyser services, encompassing:

- Service & Calibration
- Technical Support & Training
- In-house Training
- On-site Service & Maintenance
- Field Service
- Data Reporting
- Data Validation
- ISO 9001 Certification
- VCA Certification





SOME REFERENCES

TU Delft
imec
Chemours
sabic
gsk GlaxoSmithKline
DCMR milieudienst Rijnmond
EXXON
BASF We create chemistry
Shell
vito
Rijksoverheid
REPSOL
Agip
Vlaanderen is milieu
aramco
TNO
Ministerie van Defensie
DEME Dredging, Environmental & Marine Engineering
DOW
VUB VRIJE UNIVERSITEIT BRUSSEL
rivm
GGD Amsterdam
bruxelles environnement .brussels
GUNVOR
Utrecht University
KNMI
KMI
THE GOVERNMENT OF THE GRAND DUCHY OF LUXEMBOURG Ministry of the Environment, Climate and Sustainable Development
Universiteit Leiden
Universiteit Antwerpen
Universiteit Antwerpen
DAF
TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY
ISSeP Institut scientifique de service public
BAYER
Janssen PHARMACEUTICAL COMPANIES OF Johnson & Johnson
TotalEnergies

CONTACT US FOR FURTHER INQUIRIES

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