World's first fuel-cell hydrogen process analysis solution

Trusted by leading petrochemical companies, metrology laboratories and institutions.

Our offering

- Complete analytical system
- Ultra-trace process chromatograph
- Leak-proof and inert sampling system
- Ultra-trace calibration system, inert flow path for trace sulfur.

Key Applications

- Trace permanent in hydrogen (O_2, Ar, N_2, CH_4, CO, CO_2)
- Trace sulfurs in hydrogen (H_2S, COS, Mercaptans, others)
- Helium in hydrogen
- Trace H_2O in hydrogen
- Total hydrocarbon (THC) in hydrogen
- Chlorocarbons in hydrogen

Unique features

- Robust, designed for process use
- Enhanced plasma discharge (Epd) sensing technology:
  - High sensitivity permanent gas and sulfur analysis
  - Only requires inert carrier gas, no need for supporting gas such as fuel
- Long lasting PLSV valve, optimized for trace sulfur analysis

ASDevices

We are innovators, engineers and pioneers.

When an analytical component or method limits the performance we desire, we innovate to overcome it and make it available to the broader GC community. That has been in our DNA for the past 30 years.

Our game-changing inventions throughout the years

1992
Plasma detector for trace N_2 analysis

1995
New method to reduce H_2O interference on N_2 measurement

2000
First Ar in O_2 separation column

2001
First fully integrated process GC for trace N_2 and Ar in O_2 for semiconductor industry

2004
New UHP gas sampling system

2005
First purged diaphragm valve

2007
First purged conical rotary valve

2016
New extended lifetime principle for noble gas purification

LipLOK fitting to improve fitting leak integrity and reduce dead volume

2017
Enhanced plasma discharge sensing technology

2018
PLSV GC valve technology

2019
Modular GC oven

PLSV valve for trace sulfur analysis

GCS trace gas calibration system

2020
New method for trace sulfur analysis in H_2

PPDV purged diaphragm valve technology

2023
New PLSV valve compatible with third-party actuators

What we can do **for you**

With over three decades of experience in air separation, it's an industry we know well. In fact, we're proud to say that in the 1990s, two of our inventions – the first reliable crude argon analyzer and the first interference-free online N_2 analyzer – revolutionized the gas analysis industry. And that was just for starters.

Our edge is that we're more than GC integrators – we're technology designers. From air separation plant designers to analytical system designers, we're innovators and inventors, through and through. If a solution doesn't exist, we'll create one that's not only high-performance, but easy to use and affordable, to boot. And it doesn't end there. We continually test our products and improve on them, so that we can offer you a range of cutting-edge solutions to take care of everything from quality control to plant efficiency optimization. As innovators in the field, we worked hand-in-hand with leading industrial gas producers to design solutions sure to respond to both their current and future challenges.

Analytical **system measurement** capabilities

ASDevices' analytical systems can be configured to measure all or just some of the key impurities listed below, using the ISO 14685:2019 standard measurement range, ultra-high purity hydrogen, or custom ranges.

		Achievable Limits of Detection	
Analytes	ISO 14685:2019*	Standard version	Ultra-High Purity
N_2	300 ppm	1 ppm	0.5 ppb
Ar	300 ppm	1 ppm	0.5 ppb
He	300 ppm	100 ppm	100 ppm
CH_4	100 ppm	1 ppm	1 ppb
O_2	5 ppm	1 ppm	1 ppb
H_2O	5 ppm	0.5 ppm	N/A
NMHC†	2 ppm	0.1 ppm	1 ppb
CO_2	2 ppm	0.02 ppm	1 ppb
CO	0.2 ppm	0.02 ppm	1 ppb
Halogenated compounds	0.05 ppm	5 ppb‡	5 ppb‡
Total Sulfur§	0.004 ppm	0.5 ppb	<0.1 ppb¶

* Maximum concentrations allowed by the ISO Standard for fuel-grade hydrogen.
† Two options available: Separated CH4/NMHC peaks measured with Epd technology or single THC peak measured with our eFID.
‡ Organic halogenated compounds (CH3Cl, CH2Cl2). Solutions from trusted partners for inorganic halogens.
§ Sulfur compounds can be speciated or total sulfur can be measured as H2S using our sulfur converter.
¶ High sensitivity for sulfur possible with the Sample Concentration System (SCS).

Note: measurements for HCHO, HCOOH, NH3, particulates or continuous H2O analysis can be offered through ASDevices trusted partners.

Offering a complete solution based on the best technologies

COMPLETE SOLUTION

SAMPLING SYSTEM

Sample stream selection system (S4)

Offers unsurpassed sample integrity with leak-proof design. Stand-alone or integrated with our GC platforms.

PROCESS GC GAS ANALYZER

KA5000plus process GC analyzer

Based on our entry-level cost-effective mini GCSense platform, for applications requiring a maximum of 2 chromatographic valves and 1 detector.

KA6000plus process GC analyzer

Based on GCSense platform, designed for medium complexity applications with up to 5 valves and 2 detectors.

KA8000plus process GC analyzer

Based on our iMOv platform with modular oven design for 6 GC valves, 2 detectors and multiple parallel chromatographic channels.

CONTINUOUS GAS ANALYZER

Sense series continuous gas analyzers

Based on our well proven Sense platform, it offers the most advanced features on the market. The compact design minimizes space usage in the analytical rack.

CALIBRATION SYSTEM

Intelligent Gas calibration system (iGCS)

Use our sonic orifice base dilution system to accurately prepare reference gas standards

- Ultra-high precision with sonic orifice technology
- High dilution ratio, up to 1:10000
- High stability with temperature-controlled orifices
- Ultra-high leak integrity
- Inert flow path design (optional)

Other options available: sulfur converter for total sulfur analysis and sample concentration system for higher sensitivity.

Sample concentration system (SCS)

Unsurpassed sample integrity

Available as both a 19-inch rackmount for iMOv or a stand-alone benchtop unit for miniMOv, our sample concentration system (SCS) is designed around our Purged Lip Sealing Valve (PLSV) Trap And Release (T&R) valve, for a unique configurable 4-step process that ensures sample integrity. When combined with our electrically cooled cold trap and flash heater, you'll benefit from only the best performance.

Features

- Robust, designed for process usage
- Proprietary trap optimized for ultra-trace sample concentration in hydrogen
- Unique PLSV valve technology, designed for trace sulfur analysis
- Unique configurable 4-step process: sampling, venting sample matrix, trap isolation and trap release
- Unsurpassed leak integrity with Purged Lip Sealing Valve (PLSV) technology
- Trapping temperature down to -30° C and release temperature up to 300° C
- Ballistic release temperature
- Inert flow path for trace sulfur

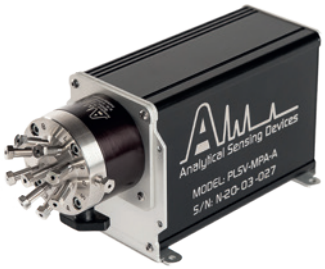
Applications

- VOC analysis
- Sulfur analysis
- Permanent gas concentration
- Any other application requiring concentration
- Any applications using leak-sensitive detectors such as mass spectrometer

PATENTED

Powered by PLSV valve technology

Typically, sample concentration is used for trace measurement applications. To prevent contamination, sample integrity is key. What's more, leaks from the valve can cause baseline upsets and noise. Our sample concentrator's exceptional performance comes down to our unique Purged Lip Sealing Valve (PLSV) that, when combined with a unique embedded 4-step process, overcomes all these issues and provides unsurpassed performance.

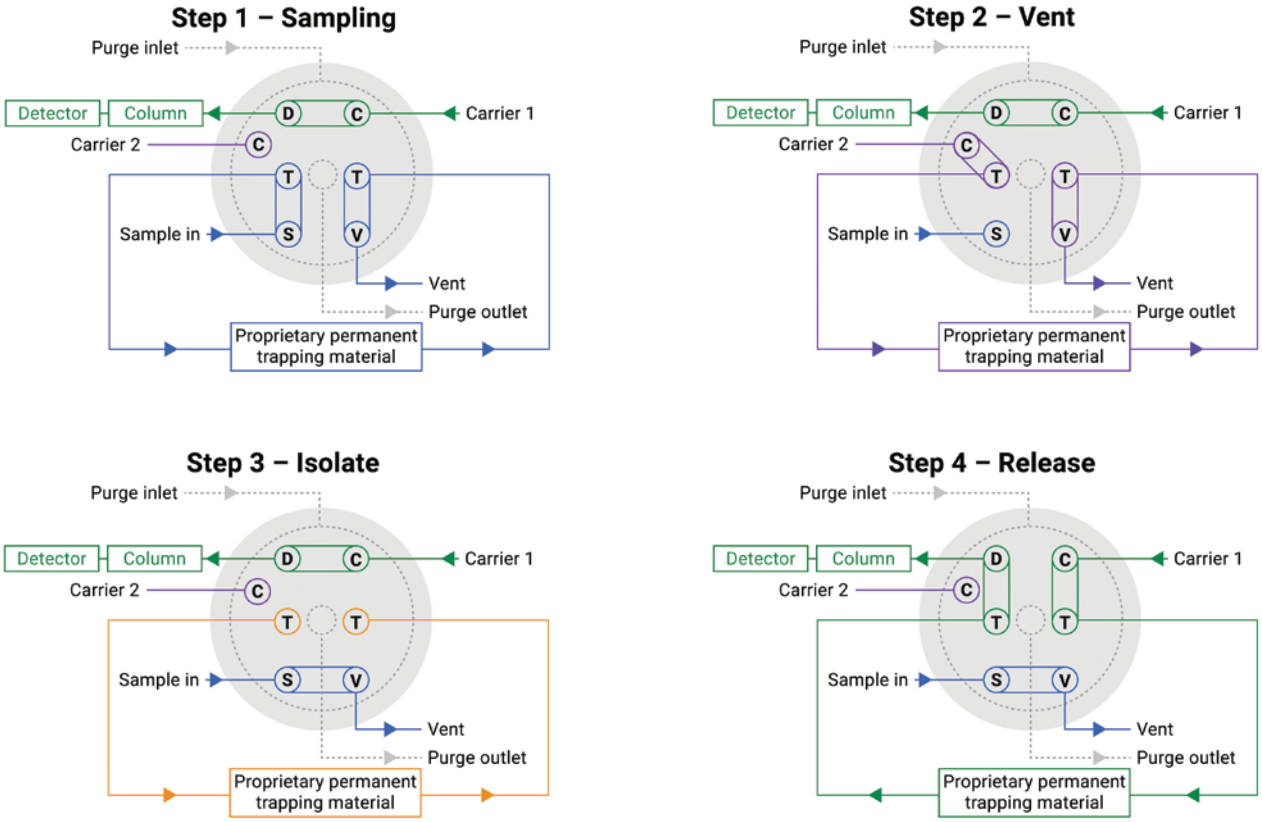


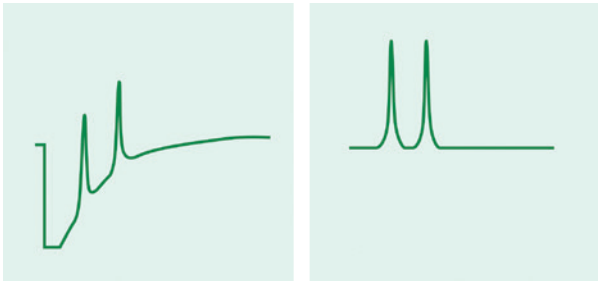
- No leaks: Eliminates inboard/outboard and cross-port leaks, prevents column contamination and baseline shifts (from air leaks)
- Improved baseline noise
- Embedded 4-step process with unique matrix venting feature
- No dead volume: Internal flow path contains no unswept volume

Solution highlights

Unique configurable 4-step process

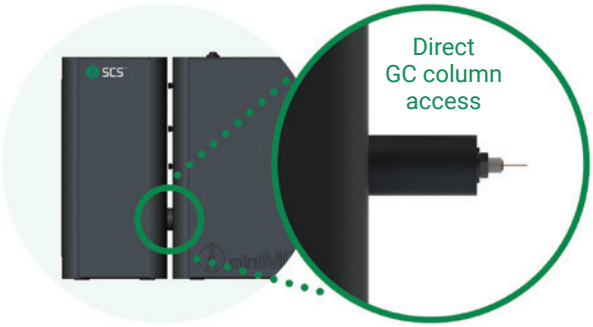
- Unique trap isolation step improves chromatography and peak sharpness
- Unique sample matrix vent step simplifies and improves chromatography
- No detector baseline shift during release stage due to PLSV technology's unsurpassed leak integrity





Without vent feature

With vent feature



No transfer line

Matrix venting feature

The T&R's unique embedded sample matrix purge feature allows to purge the sample matrix. As an example, hydrogen matrix can be vented, while our innovative trapping material allows permanent gas concentration to achieve ppt limit of detection.

No cold spot

When combined with our iMOv or miniMOv platform, it eliminates the need for a heated transfer line. This design feature is key to improving chromatography as it reduces the risks of a cold spot.

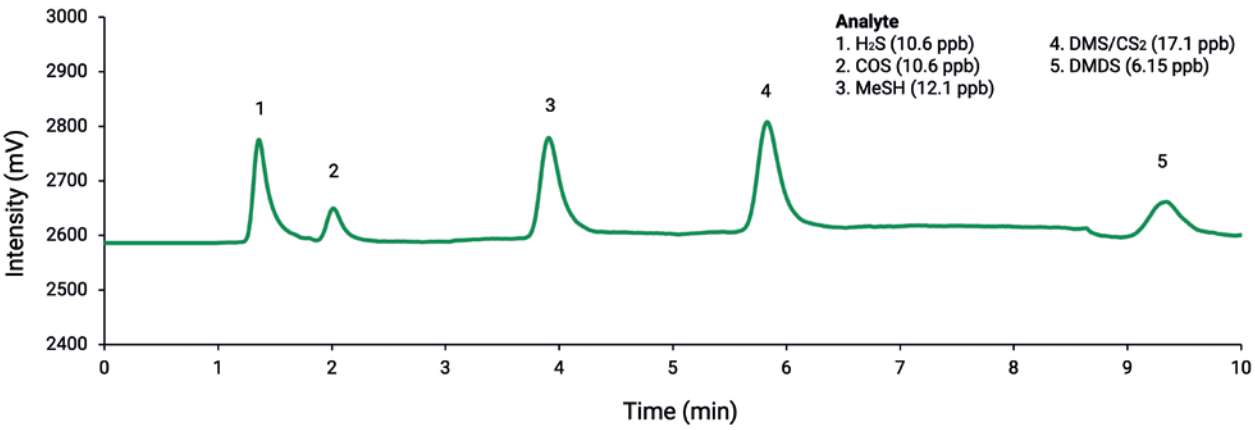
The most sensitive and stable solution for process-oriented **sulfur analysis**

- Sensitivity level can be adjusted from the sampling flow rate, without affecting the cycle time
- Limits of detection down to the ppt is achievable for all reduced sulfur compounds using the SCS

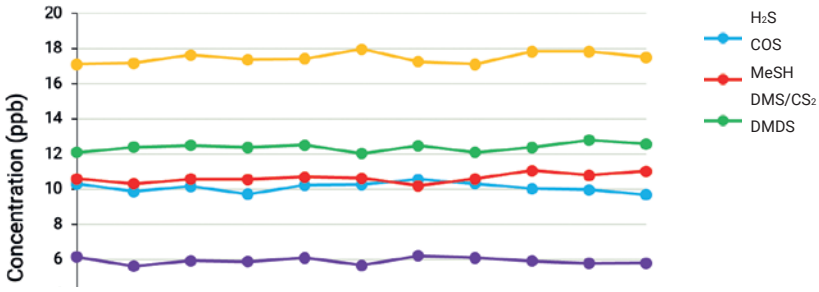
Converter available for total sulfur analysis

- All sulfur compounds (including SO_2) can be converted into H_2S for ppt-level total sulfur analysis
- Sulfur compounds can be speciated or total sulfur can be measured as H_2S

Ultra-trace sulfurs in hydrogen with SCS concentration system



Measured sulfur concentration for successive injections of the same sample



Intelligent gas calibration/dilution system (iGCS)

The data provided by your analytical system is only as accurate as your calibration.

Gas calibration and analytical system performance validation depends on knowing how to accurately dilute gas standards. Our high-end dilution system, based on a laser-calibrated orifice, is the result of over 30 years of experience in the field, so you can count on unparalleled precision.

Features

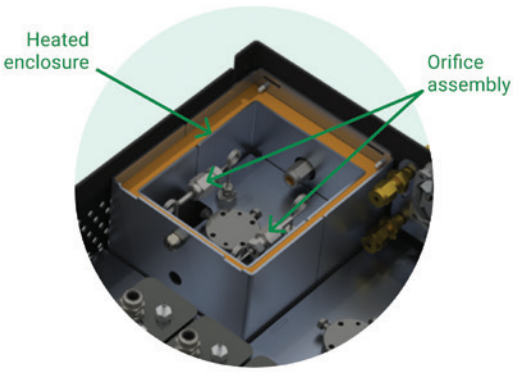
- Sonic orifice technology with high dilution ratios from 1:2 to 1:3500 (custom up to 1:10000)
- High precision (<0.5% rel.)
- High sample integrity with purged electronics pressure regulator
- Advanced mathematical model to enhance precision and stability
- Heated flow path up to 200°C
- User configurable orifice
- Optional inert flow path for sulfur and reactive gas analysis
- NIST traceable certificate available

Applications

- Ultra-trace analyzers calibration / validation
- Ultra-trace N_2 and O_2 calibration / validation
- Portable calibration system for on-site calibration
- Gas analyzer manufacturing/quality control
- Gas standard preparation
- Gas analyzer performance validation
- Research and development

Enhanced stability

Pressure and temperature must be stable. That's why we use a highly stable, temperature-compensated pressure sensor in our electronics pressure controller (EPC). What's more, the orifices are installed inside a heated, adjustable enclosure, and the temperature can be adjusted up to 200 °C to better accommodate your gas sample.



Typical configuration

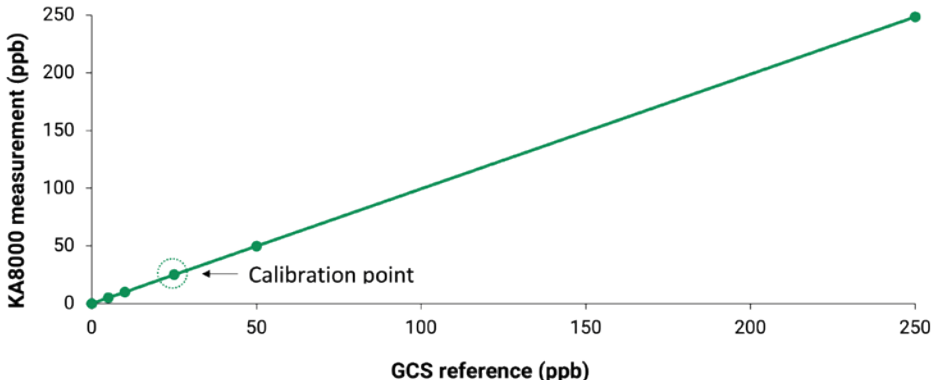
KA8000plus gas chromatogram

Benefits of calibrating with ASDevices iGCS

Most ultra trace instruments designed to measure low ppb levels are calibrated in ppm level leaving doubts about true performance to precisely measure ultra trace contained in gas. Our iGCS was designed for that very reason. Instead of calibrating our instruments with widely available 5 to 10 ppm standard calibration gas, we use our iGCS to precisely calibrate our instruments at just a few tens of ppb. The result, a more precise and reliable measurement.

Analyte linearity examples

- Nitrogen
- Hydrogen
- Carbon monoxide
- Carbon dioxide
- Methane
- Argon



Performance certified

Qualifying an ultra-trace instrument requires dedicated tools and know-how. This is what we have built based on our expertise.

All our GCs are tested and certified during manufacturing using strict quality control procedures developed specifically for that field.

Sample stream selection system (S4)

Unsurpassed sample integrity

We know that sampling system quality greatly impacts analytical system performance. That's why for over three decades, we've been designing only the best sampling solutions, like our innovative sample stream selection system (S4) with our proprietary Purged Lip Sealing Valve (PLSV) that delivers unsurpassed sample integrity.

Features

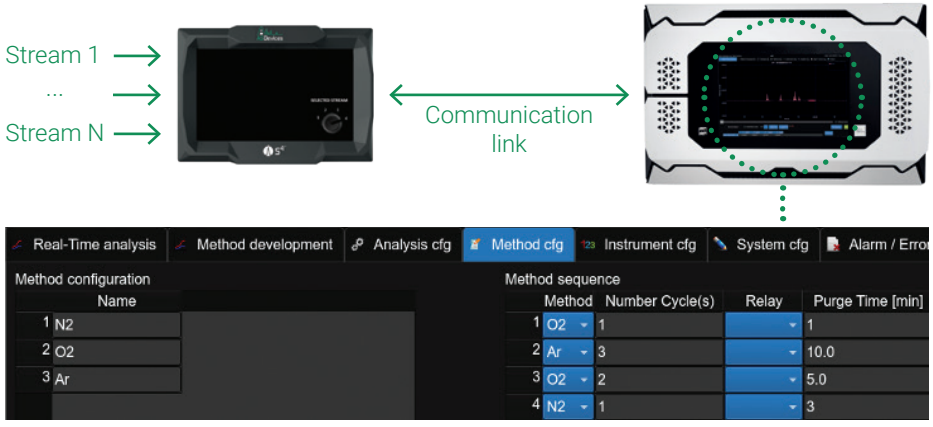
- Based on Purged Lip Sealing Valve (PLSV) technology
- PLSV technology eliminates cross-port leaks
- 2, 4, 6 and 8 sample inlet versions available
- Manual, automatic or remote control
- No dead or unswept volume
- Stand-alone or integrated with GC platform
- Designed for ultra-trace sulfur analysis, based on PLSV valve technology.

Applications

- Industrial gas sampling
- UHP gas sampling
- Electronics gas sampling
- Reference or calibration gas sampling
- Fence line monitoring

Automate multi-stream analysis with our Sample stream selection system (S4) and ASDSense software

- Define number of analysis per stream
- Automatic analytical method switch
- Automatic stream switch
- User configuration purge time



Pure

Quantum leap in gas purification

A premium quality gas purifier, the ASD Pure is designed to be robust and provide outstanding performance thanks to its dual vessel technology. It's available in three different flow capacities (300, 1000 and 5000 ml/min) to suit your needs.

Features

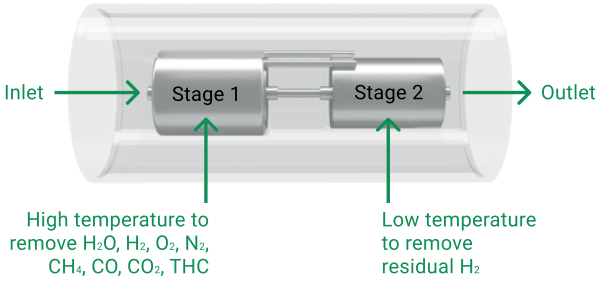
- Gases purified: Ar, He, Ne, Xe, Kr (N_2 is also an option)
- Impurities removed: H_2O, H_2, O_2, N_2, CH_4, CO, CO_2, hydrocarbons
- Achievable impurity level: < 1 ppb (< 5 ppb single vessel version)
- Nominal flow: 300 ml/min, 1000 ml/min and 5000 ml/min
- Lifetime at nominal flow: 2 years
- Proprietary dual vessel technology: no H_2 release

Applications

- Carrier gas purifier
- Zero gas generator for online analyzers calibration
- Reference gas generator for TCD analyzers
- Mass spectrometer
- Perfect for all kinds of detectors: plasma, HID, DID, FID, PDID, TCD, ECD, etc.

Dual heated getter technology

Traditional heated getter purifiers release trace amounts of H_2 due hydrocarbon cracking and metal processing at high temperatures. Our dual-stage purification design unlocks better purification and superior performance. With a second vessel operating at a lower temperature, the H_2 released by the first vessel is reduced below 1 ppb.



PATENTED

Intelligent plasma assisted purification system (PAPS) also available

Features in addition to Pure:

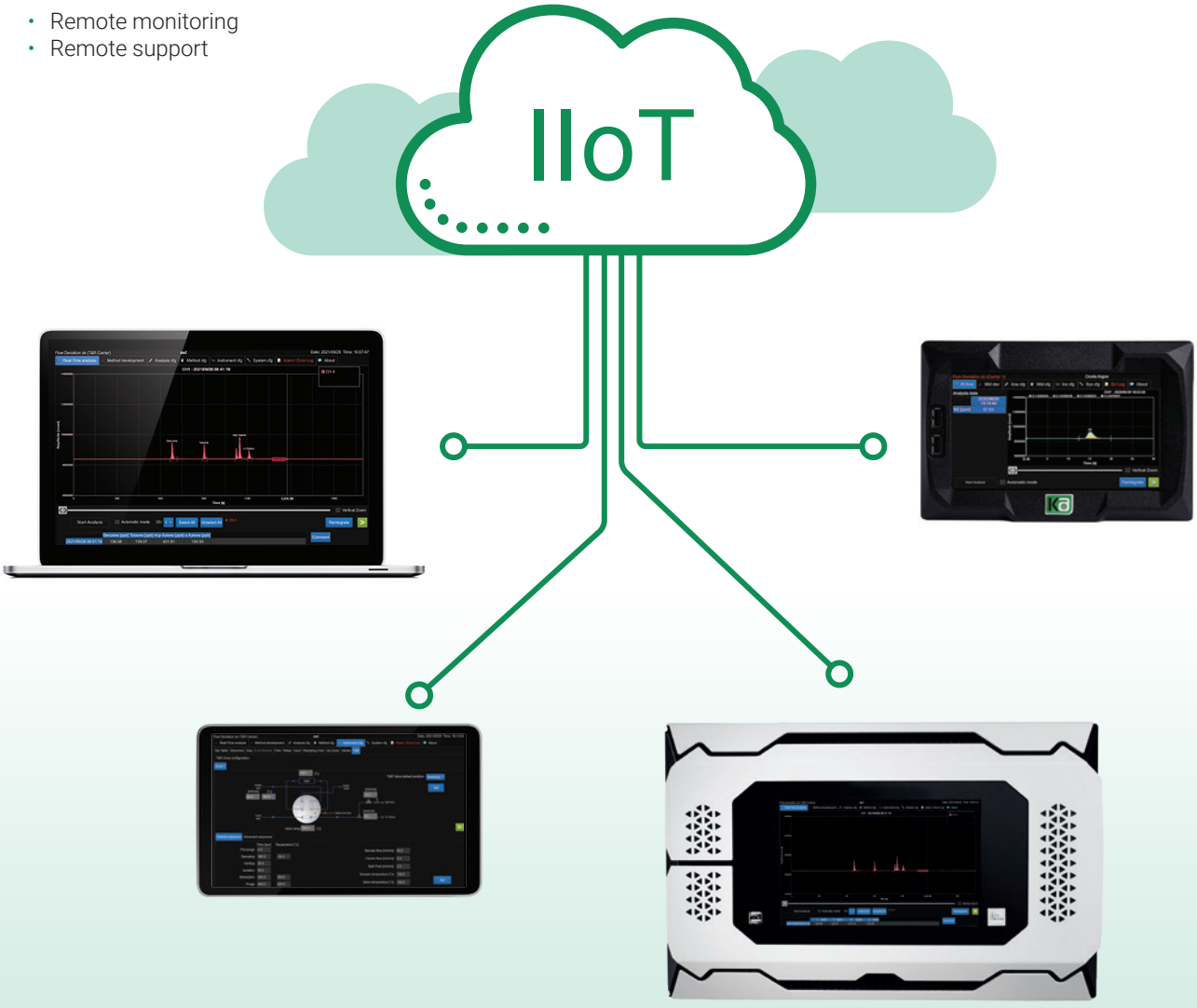
- Extended life with Plasma assisted purification
- End of life detection capability

IIoT ready:
Designed for the future

Many industrial analyzer platforms were designed over a decade ago, but our innovative, new online analyzer platform was developed with the future in mind. Connectivity is key to remotely access your GC platform from anywhere and our software even supports the well-established IIoT protocol, MQTT.

Access your instrument from anywhere

- Remote monitoring
- Remote support



KA8000Ex purge cabinet available

Our technologies

Advancing gas chromatography and gas analysis

At ASDevices, innovation is built right into our DNA.
So when we realized that existing technology just wasn't good enough, we began challenging ourselves to develop better, smarter, more cost-effective gas analysis solutions. From products that use less gas to ones that require no spare parts, maintenance or consumables, everything we do is designed to improve efficiency and make things simpler for you – and healthier for our planet.

SePdd detector
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eFID, TCD and FePID
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Purged Lip Sealing Valve (PLSV)
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Purged Pulse Diaphragm Valve (PPDV)
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Purged electronic pressure controller
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ASDSense software: powering all our GC platforms
Pages 20-21

ArDSieve GC column
Page 22

PATENTED

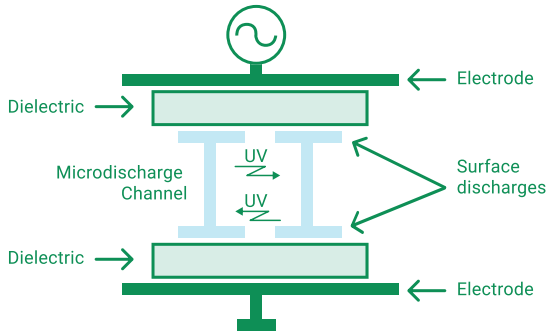
SePdd detector Based on enhanced plasma discharge (Epd) technology

A quantum leap for gas chromatography sensing

The Epd (enhanced plasma discharge) is our proprietary gas detector technology based on a stabilized dielectric barrier discharge (DBD) plasma. The breakthrough resides in the focusing and stabilizing compound electrodes (patent pending) which generate a more stable plasma discharge across a broad range of operating conditions. It uses the highly energetic plasma behaviors to perform measurements. Its versatility and sensitivity make it a technology of choice to measure molecules with high ionization potential, such as the permanent gases, as well as molecules with lower ionization potential, such as VOCs, hydrocarbons and sulfurs, from ppt to % range.

Stabilized dielectric barrier discharge (DBD)

At the core of our Epd technology, a highly energetic plasma source is used to ionize molecules. Its unsurpassed performance is a result of the Epd stabilized dielectric barrier discharge. The DBD isolates the discharge electrodes from the ionized plasma, eliminating sputtering, cell inner wall coating and analyte interference.

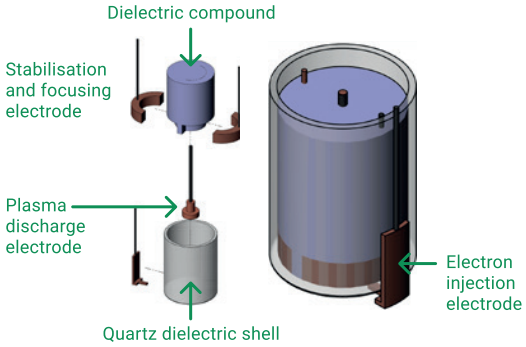


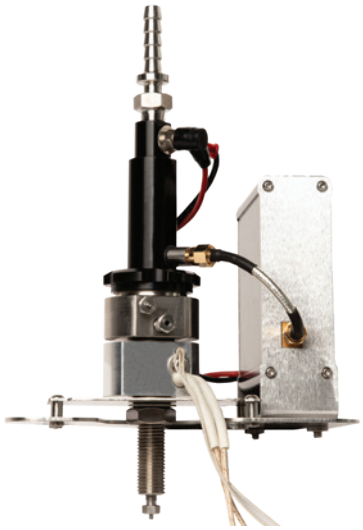
Compound electrode

This major breakthrough comes from our innovative compound electrode (patent pending). By nature, DBD generates streamer discharges. This results in a noisy signal impacting the signal-to-noise ratio. The main advantage of our technology is that unlike other DBDs or plasma emission detectors (PEDs), our stabilization and electron injection electrodes (patent pending) are embedded in the compound electrode. This enables the electrode to improve stability by sweeping away the accumulation of charges on the inner surface wall.

Our unique compound electrode technology also provides other benefits such as:

- High temperature operation
- High pressure operation
- Adjustable discharge gap
- Higher ionization potential and efficiency





eFID

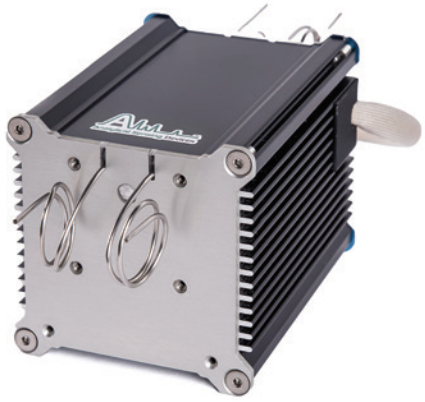
Our premium eFID (enhanced flame ionization detector) is far superior, thanks to engineering details – both mechanical and electrical – that make it a higher performing, more reliable device.

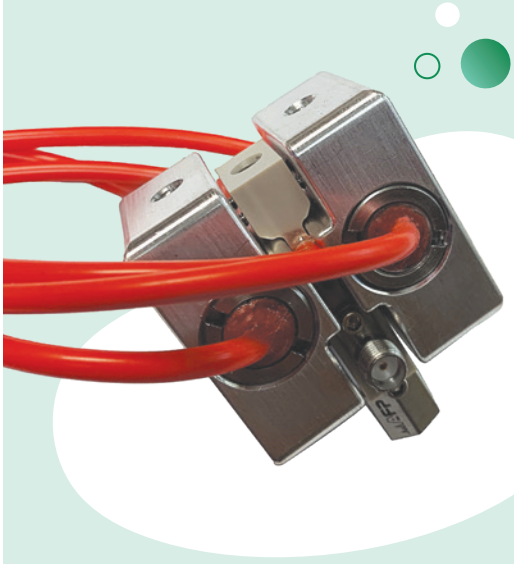
- < 10 ppb CH_4 LOD (1 ppb with eLOD algorithm)
- eSense electrometer: Low-noise and low-drift current electrometer design
- Inlet for capillary and packed column
- Flame-out and auto-ignition with our ASDSense GC software

TCD

The thermal conductivity detector (TCD) is a must-have detector for some applications because it's a cost-effective device – one that performs very well in high level (%) applications. Our TCD includes a reference cell and offers premium performance thanks to its amplifier and a TCD proprietary driver circuit.

- Low-noise and low-drift amplifier design
- Differential TCD design for enhanced stability and sensitivity





FePID

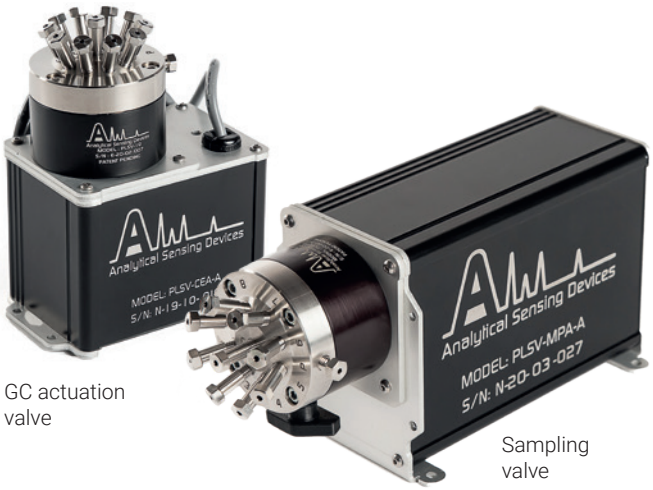
Field enhanced photo ionization detector (FePID)

Photo ionization detectors (PIDs) are the gold standard for VOC measurement. Their UV lamp, however, requires ongoing maintenance – especially in the high-energy version. With a patent-pending dielectric barrier discharge (DBD) UV lamp and the improved efficiency of field-assisted photo ionization, our field enhanced photo ionization detector (FePid) overcomes this challenge, making it a welcome solution for a broad range of applications.

- Patent-pending field enhanced photo ionization: High-intensity field to improve photo ionization efficiency
- Non-consumable dielectric barrier discharge UV lamp

PATENTED

Purged Lip Sealing Valves (PLSV)



GC actuation valve

Sampling valve

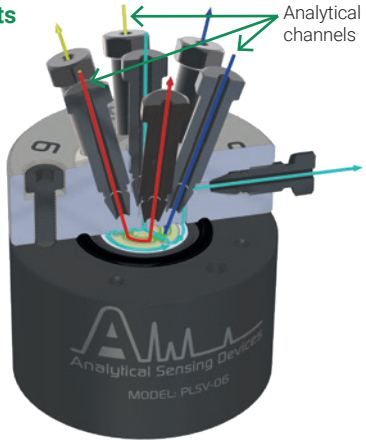
The most reliable and durable analytical valves: our stainless coating for ultra-precise sulfur measurement truly sticks on !

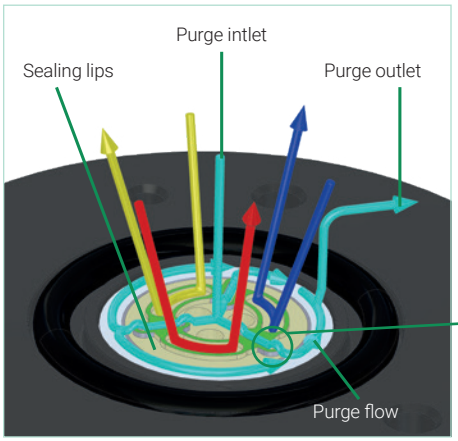
- No leaks: Unique purge technology eliminates inboard/ outboard and cross-port leaks
- Long lifetime: Over 2 million actuations in UHP applications due to unique reduced surface area insert technology
- Constant pressure drop: No change in pressure/flow drop across temperature range and life span
- No dead volume: Internal flow path contains no unswept volume

Leaks are virtually impossible by design

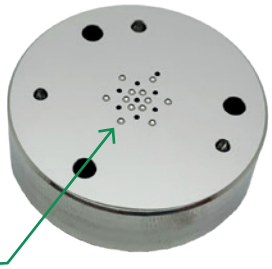
With its purging channels located between two adjacent valve channels and valve head purging pockets machined into the valve head, our PLSV's unique, patented design does away with leaks. The pockets connect the purging inlet and outlet through the channels, allowing purge gas to flow freely. Since the volume around the insert and in between ports is continuously removed, there are no more inboard/outboard and cross-port leaks.

6 ports PLSV valve





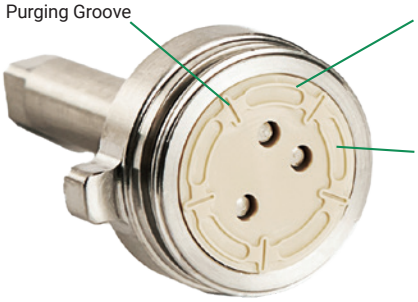
6 ports valve head



Purge pocket to allow purge flow between ports to eliminate cross-port leaks.

Improves lifetime with reduced surface sealing area

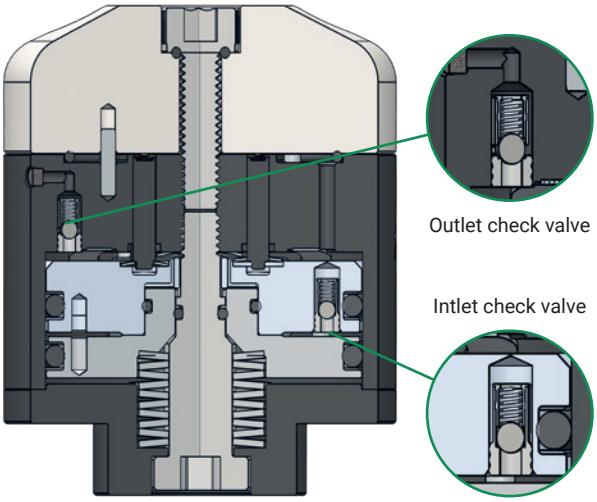
Using finite element modeling (FEM) and real-life testing, we optimized the sealing lip size and shape. The result is a sealing surface area that's 14% the size of a standard conical rotary valve, decreasing wear and tear and friction on the valve. What's more, the insert material is specially treated by a proprietary process that improves the surface finish, hardness and creeping.



PATENTED

Purged Pulse Diaphragm Valves (PPDV)

Our Purged Pulse Diaphragm Valve (PPDV) uses the static purge principle to purge the valve's inner volume through the actuation gas. It works for applications that require the features of a diaphragm valve or when better performance is needed from existing applications without design changes.

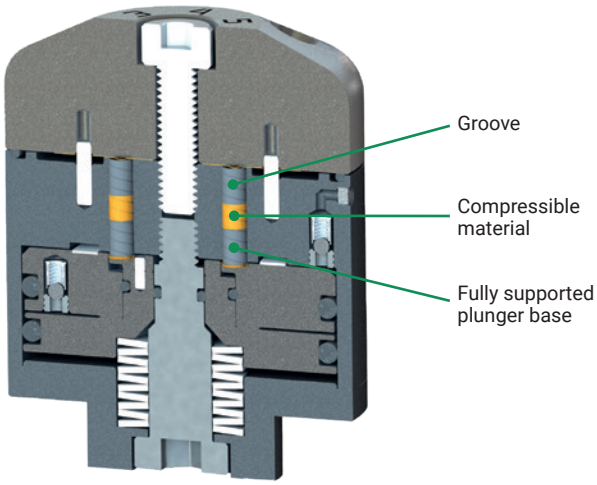


Static purge principle

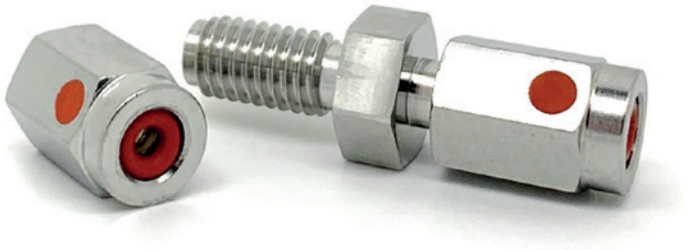
The system is based on a static purge system that substantially reduces purge gas flow consumption by successive dilution instead of a dynamic (continuous flow) purge concept. This typically results in only 5% of the purge flow consumption compared to a standard purge valve.

New plunger design

- Purge grooves added to its perimeter to increase air flow and exchange between actuation and under-the-diaphragm volumes.
- Whole plunger base now supported so that the sealing pressure is evenly applied against the diaphragm, minimizing the leak risk and localized diaphragm deformation.
- Plunger's rigid midsection replaced with a compressible one that's separated into three sections for overall flexibility



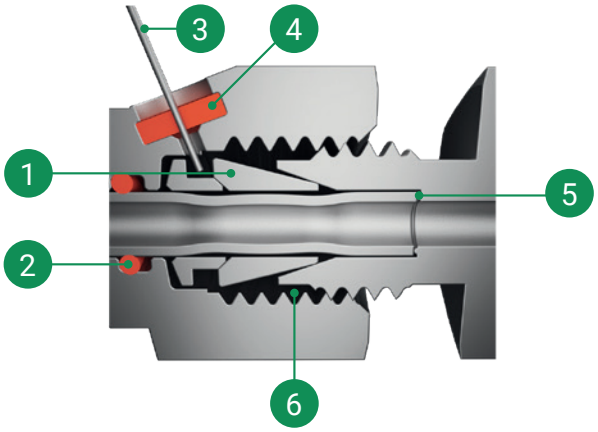
LipLOK compression fittings



Bringing analytical performance to the industrial/ instrumentation compression fitting

Our LipLOK fitting brings together industrial design analytical performance and robustness with improved leak detection. It uses two sealing points – the first, a sealing lip, is compression-fit to the tube end, allowing for minimal loss of analytical performance. LipLOK is similar to the VCR fitting but with less dead volume in its flow path. The analytical-grade seal performance is achieved between the tube end and the lip feature using a very low, almost finger-tight torque. The double ferrule design provides the second level of sealing, which resists the effects of vibration and protects against ejection of the tube from the fitting. This is achieved without transferring excessive force to the lip.

No unswept volume and optimized for leak integrity

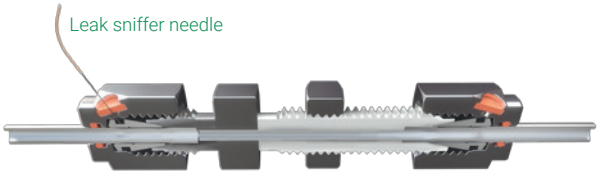


1. **Standard front ferrules**
   Second level of sealing and tubing swaging action that prevents tube expulsion under high pressure/ vibration environment
2. **Tubing surface seal and nut sealing ring**
   Provide concentration chamber sealing
3. **Syringe needle for leak detection**
4. **Septum**
   Leak detection sniffing with syringe
5. **Coated sealing ring**
   First level of sealing
6. **Leak concentration chamber**
   Sniffing: Detect the smallest leaks by accumulating and concentrating them

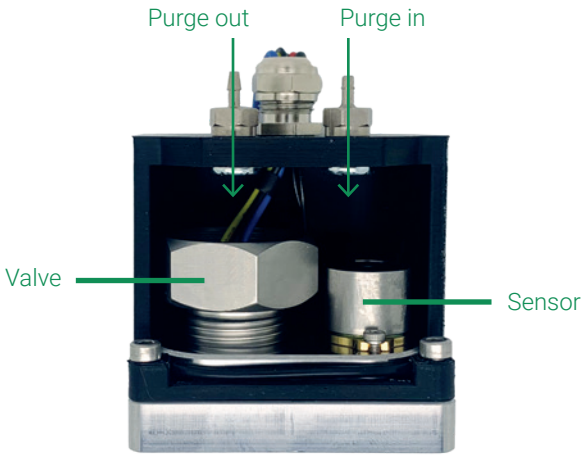
   Tracer: Pressurize the chamber with a tracer gas for leak integrity test

Leak detection system's syringe or sniffing probe

A surface seal has been added to the fitting nut and there is now a seal or septum in the sniffing hole, so any leak that develops inside the fitting will be forced to accumulate in the leak chamber space. The pressure builds up in the chamber until it reaches a certain value, at which point it goes through or around the septum. Inserting the needle of a sniffer or leak detection apparatus allows sensitive leak detection since the leak is concentrated in this chamber.



Purged electronic pressure controller



Lower your operating costs by reducing carrier gas consumption by as much as 50%

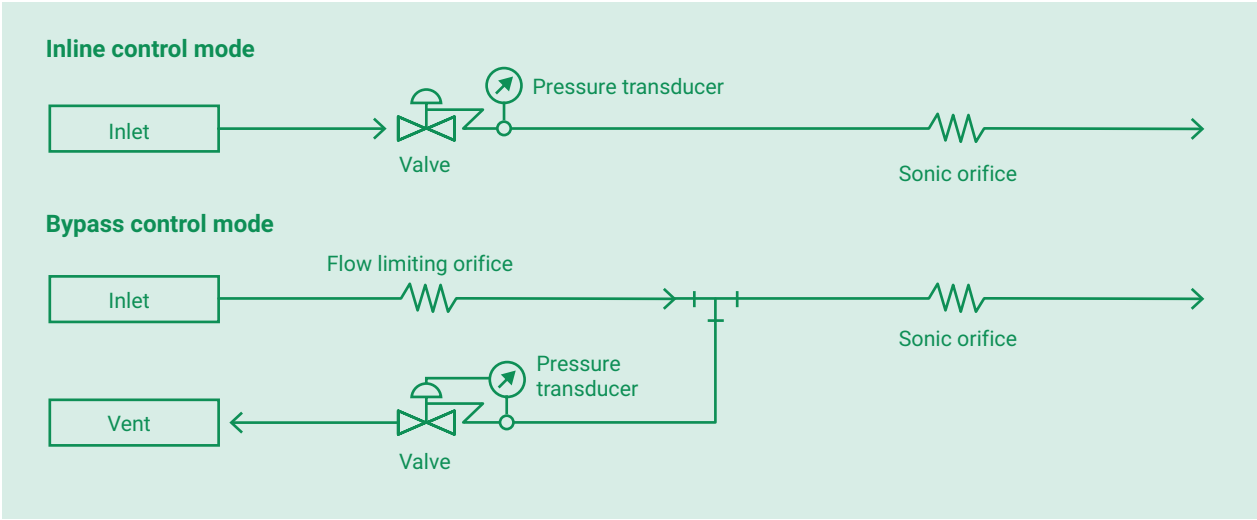
- No leak with unique purge concept
- Temperature compensated pressure sensor for enhanced stability
- Allow carrier gas to be controlled in inline control mode and reduce carrier gas consumption by as much as 50%

Leak integrity

As expert in ultra-trace N_2 analysis, we understand how serious a leak can be. That's why all the components in our proprietary-design electronics pressure controller (EPC) are encapsulated in an enclosure that can be purged using an inert gas such as argon or helium, voiding the effects of any ambient leak. It's an innovative design – one that ensures that sample integrity is preserved.

Inert flow path

We offer two sample flow configurations: Inline and bypass. For reactive mixtures, the intelligent gas calibration system (iGCS) can be configured with a by-pass control mode, so that the sample is never in contact with control elements such as the valve and pressure sensor.



ASDSense software: powering all our GC platforms

Innovative embedded process GC software built for ease of use and robustness

ASDSense is a powerful GC analysis software that runs on all our OEM GC platforms. It's been designed to be robust enough for 24/7 process use with laboratory-like data analysis features. What's more, it's intuitive and loaded with features like multiple innovative advanced signal processing algorithms, making it the most effective and versatile process GC software on the market.

Features

- Based on a real-time industrial operating system
- Designed based on software redundancy for reliability
- Advanced signal processing
- Multi-method capability with automatic sampling system synchronization
- Data analysis
- Multilingual (English, Simplified Chinese)
- IIoT ready
- Support digital relays, 4-20 mA, RS-232, ethernet, Modbus
- Full feature GC laboratory software also available

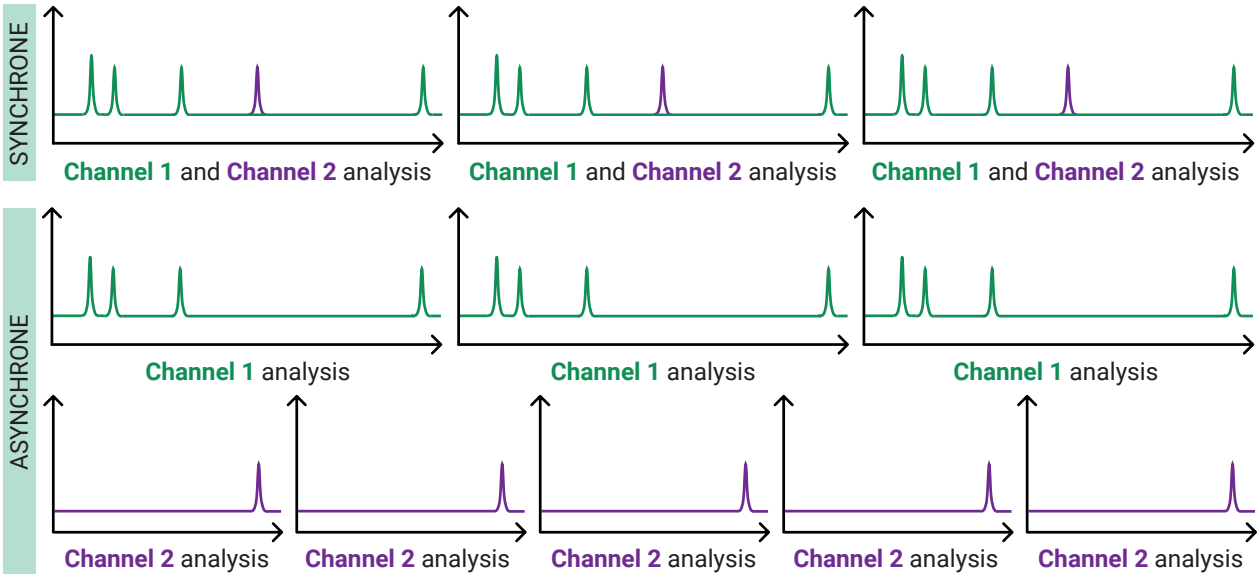
Enhanced LOD (ELOD) and peak re-modeling algorithm

Over time, the ELOD algorithm analyzes and learns the detector's baseline noise and peak shape based on a number of consecutive chromatograms. The learning process allows for a better understanding of the signal's power distribution and differentiates between noises.

- LOD is improved by up to 10 times
- Random noise is removed
- Retention time variation is reduced
- Peak shape is improved

Asynchronous (parallel) chromatographic analysis

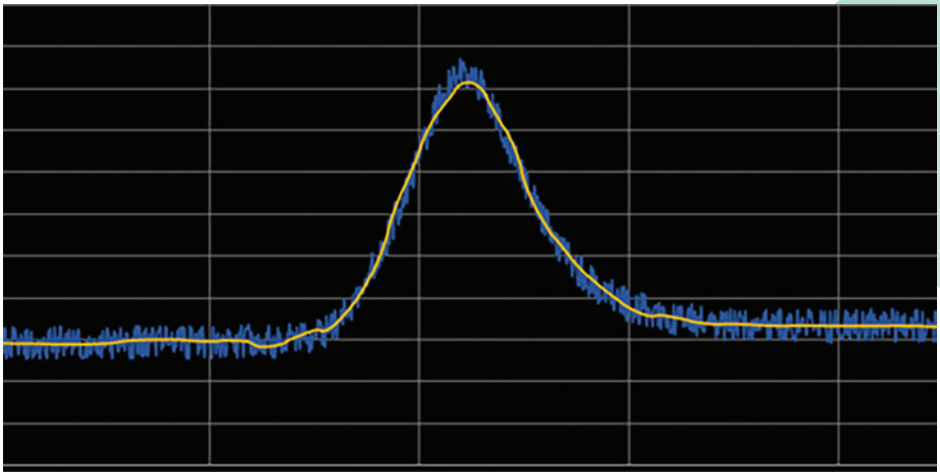
In chromatography, it's common to have parallel channels. But because traditional GC software are synchronous, it's not possible to analyze each one independently. If one channel requires a 5-minute analysis and another requires a 10-minute analysis, the shorter cycle is slowed down by the longer one, and this is a major limitation. As we always want to offer best-in-class solutions, our GC software natively support asynchronous chromatography.



Chromatogram denoising

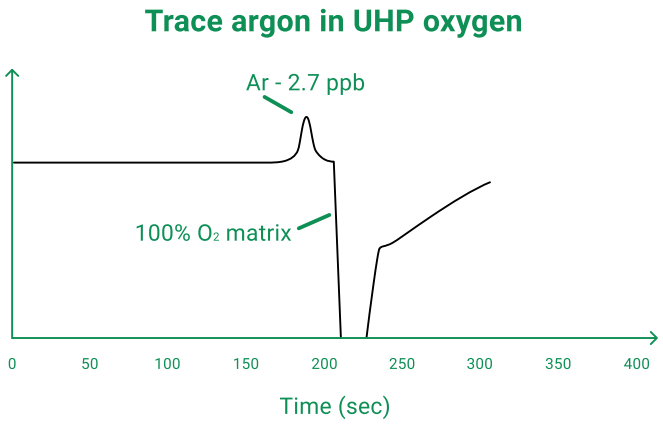
ASDSense offers a powerful signal processing algorithm to improve signal to noise (SNR), without impacting peak shape and peak area. Based on techniques used in image processing, the algorithm not only filters the peak shape in the frequency domain like a FFT of FIR type filter, but it also takes into account both time and frequency.

- Baseline noise reduction
- Limit of detection improvement
- Peak shape and area are preserved



TECHNOLOGY

ArDSieve GC column



Ar/O_2 separation column

Benefit from a new breakthrough in material science with the ArDSieve chromatographic column, an innovation that separates argon and oxygen molecules at room temperature.

- Ar and O_2 separation at 50°C column temperature
- Increased durability with proprietary HydraGuard moisture protection layer
- Lower limit of detection compared to GC systems that use O_2 traps
- No need for consumable oxygen trap
- Improved peak symmetry and reduced eddy diffusion with narrow mesh size range (60/65)
- Improved separation compared to other columns due to proprietary plasma oxidation treatment

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Proprietary ArDSieve material

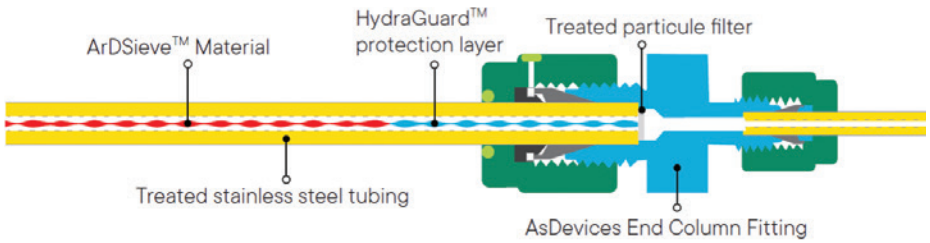
The material used in the ArDSieve column is the result of an intensive R&D program and decades of experience. A combination of clinoptilolite, an ion exchanged chabazite, and proprietary treatments, this breakthrough column separates argon and oxygen at room temperature.

Oxidation treatment

Recent advances in material science have enabled us to better oxidize solid-phase material. A proprietary mixture containing oxygen is introduced into a plasma chamber, considerably improving efficiency and producing higher quality argon and oxygen.

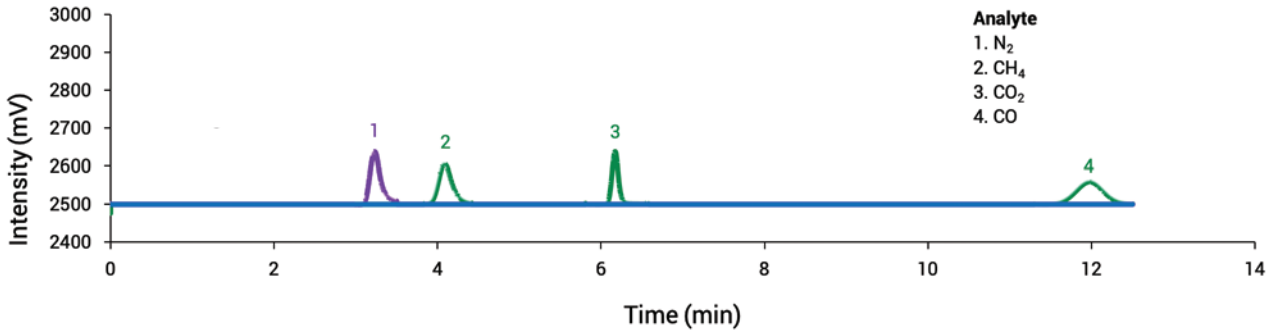
Dehydration and HydraGuard layer

To achieve proper argon and oxygen separation, it's important to thoroughly dry the column material. We put our decades of experience into developing an enhanced dehydration process that further improves the column's performance. We've also introduced a moisture protection layer called HydraGuard which sits on both sides of the column and eliminates column contamination when manipulating the column or when a contaminated sample is injected.

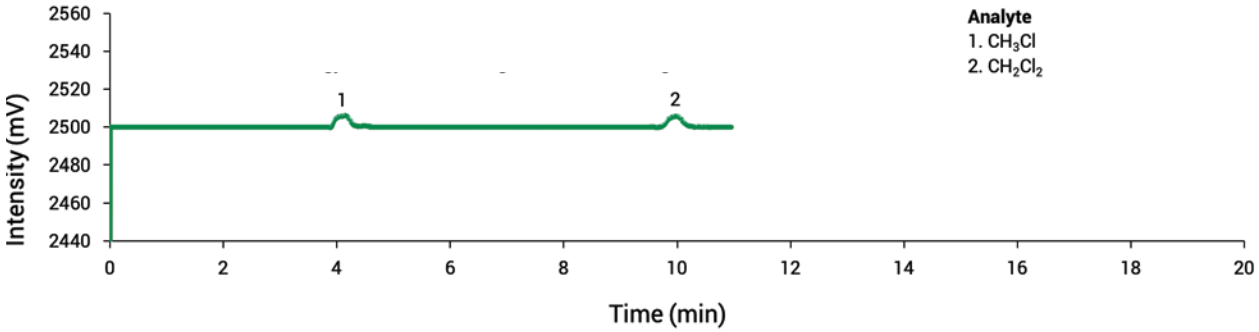


Measurement capabilities in hydrogen

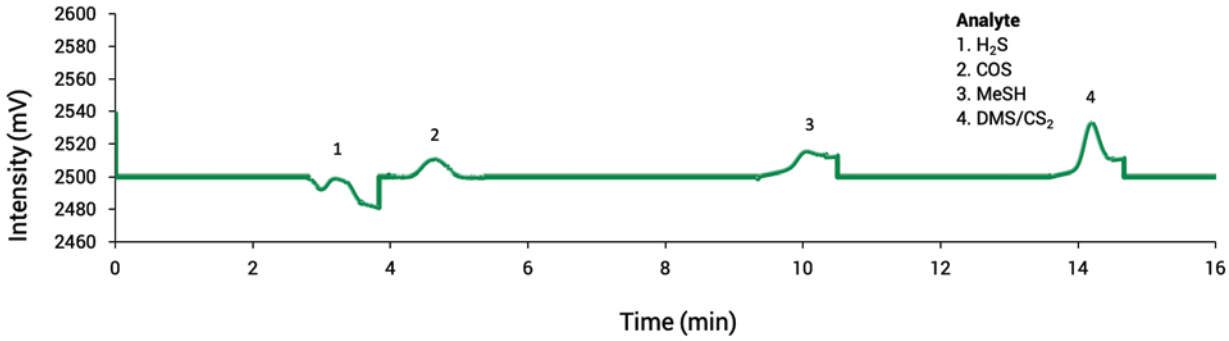
25 ppb permanents in hydrogen



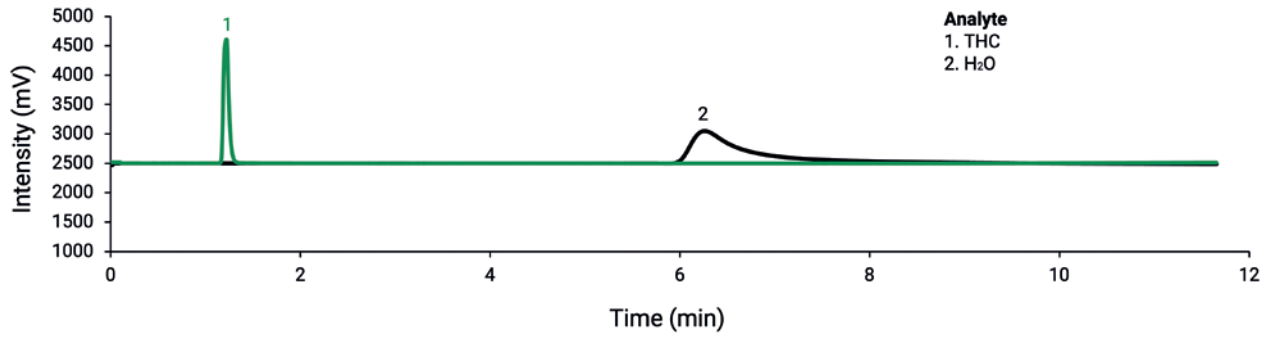
40 ppb organic halogens in hydrogen



20 ppb trace sulfurs in hydrogen without sample preconcentration



Analysis of THC and H_2O in H_2



Application notes
that might interest you

AN-04 — Improving argon recovery in air separation plants with the use of proper process analytical tools

AN-05 — Purged lip sealing valve technology and applications

AN-08 — PLSV technology – A quantum leap for chromatographic valve

AN-13 — Pressure Drop and Dead Volume: PLSV against diaphragm valve

AN-16 — Fast crude argon analysis with the mini GCSense platform technical report

AN-17 — PLSV valve purge technology explained with the leak management principle

AN-18 — Sub-ppb-measurement-of-sulfur-compounds-in-various-gas-matrices

AN-19 – GC Method for moisture analysis using argon carrier and discharge gas

Visit www.asdevices.com/documentation

Scientific publication about our fuel-cell hydrogen process analysis solution:

Analytical progress of trace impurities in hydrogen for fuel cell vehicles,
Sinopec Institute of Petroleum Processing, X. Cong et al. Chem. Ind. Eng. Prog. 2021, 40(2), 688-702

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