AIR SEPARATION PLANTS

Expert in air separation analytical solutions for over 30 years

Our offering

- Trace gas chromatographs
- Coulometric trace O_2 analyzer
- Paramagnetic O_2 analyzer
- FID THC analyzer
- Calibration system
- Sample stream selection system

Key Applications

- Argon: quality, crude
- Oxygen: quality and safety
- Nitrogen: quality
- All in one multi-gas solution
- Moisture analysis
- Krypton, Xenon, Neon and CO_2 quality
- Helium quality
- Trace N_2 analysis in argon and helium

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

2024
KA5800 Process Ion Chromatography

2025
Trace O_2 analyzer and ion chromatograph release

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 became the world standard. 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.

Our **air separation solutions** at a glance

● Process GC gas analyzer ■ Continuous Gas Analyzer

	Argon		Oxygen		Nitrogen	Krypton	Xenon	Helium	Neon	CO2
Analytes	Quality	Control	Quality	Safety	Quality	Quality	Quality	Quality	Quality	Quality
H2	●		●		●	●	●	●	●	●
O2	■ ●				■ ●	■ ●	■ ●	■ ●	■ ●	■ ●
N2	■ ●	●	●			●	●	■ ●	■ ●	●
CH4	●		●	●	●	●	●	●	●	●
CO	●		●		●	●	●	●	●	●
CO2	■ ●		■ ●		■ ●	■ ●	■ ●	■ ●	■ ●	●
NMHC	●		●		●	●	●	●	●	●
Ar			●		●	●	●	●	●	●
Ne								●		
SF6						●	●			
CF4						●	●			
N2O				●		●	●			
C2F6						●	●			
Xe						●				
Kr							●			
Light hydrocarbons (C1-C4)				●						
H2O	●		●		●	●	●	●	●	●
THC	■		■	■	■	■	■	■	■	■

Offering a complete solution
for accurate trace analysis

Ultra-Trace Gas Chromatography for the Most Demanding Purity Applications

Delivering ppt-level detection, unmatched sensitivity, and reliable impurity monitoring for semiconductor bulk gases.

Ultra-Trace Oxygen Measurement with Unmatched Stability

Non-depleting coulometric sensing technology delivering accurate ppb and ppt oxygen monitoring for critical gas purity control.

O_2 Paramagnetic

Based on a high-quality paramagnetic sensor, the KA022X analyzer offer great performance to monitor your process.

Hydrocarbon FID Analyzer

Based on our eFID sensing technology and high-end eSense electrometers, the HCSense offers the best performance in the smallest package.

Ultra-Pure Carrier Gases for Ultimate Analytical Performance

Advanced dual-vessel purification technology delivering <1 ppb impurity levels without hydrogen release.

Leak-free multi-stream sampling for ultra-Trace Analysis

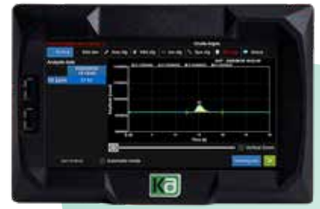
PLSV valve-based stream selection ensures unmatched sample integrity and eliminates cross-contamination in UHP gas systems.

Process GC analyzers

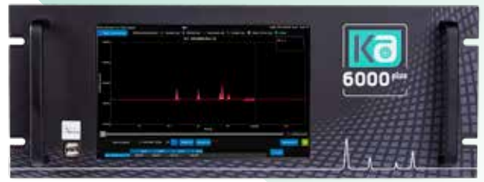
We offer three analytical solutions to meet your needs in the most cost-effective way. All of them feature the same robust electronics and software to provide great performance and precision. However, the difference resides in the number of valves, columns and features like ramping oven capability, exclusively offered in the KA8000plus solution.

Process GC analyzers features

- Powered by ASDSense GC software
  - Based on Industrial Real-Time Operating System
  - Designed based on software redundancy for reliability
  - Innovative advanced signal processing features
  - Multi-method capability with automatic sampling system synchronization
  - Built-in data analysis capability
  - eLOD (enhanced limit of detection) algorithm
- Detectors: SePdd, eFID, FePID and TCD
- Valves: PLSV technology
- The lowest carrier gas consumption in the industry with purged EPC



KA5000plus — Compact panelmount process GC



KA6000plus — Rackmount process gas chromatograph

KA8000plus — rackmount process gas chromatograph

SePdd

Choice of 5 detectors

From traditional flame ionizer detector (FID), thermal conductivity detector (TCD), field enhanced photo ionization detector (FePID), enhanced helium ionization detector (eHID) to our innovative scalable enhanced plasma discharge (SePdd) detector, all our state-of-the-art solutions are based on our proprietary sensing technologies and designed to provide you with the best possible performance.

Key features:

- Unique patent-pending compound electrode withstands high temperature, high pressure, and sub-atmospheric pressure
- Plasma stabilization and electron injection electrodes
- Down to ppt sensitivity
- Argon, helium or nitrogen carrier gas
- Low-drift, low-noise, high-quality electrometer

KA5000plus
Compact panel mount process GC

Based on our mini GCSense platform, the KA5000 series is our most compact process GC. Comprised of only the highest quality components, it's a cost-effective solution that's designed for simple applications — ones that require a maximum of 2 chromatographic valves and 1 detector.

Features

- 3U panel mount fits two KA5000plus in 19 inches rack instrument
- Ultra-compact
- Cost-effective
- Designed for simple chromatographic applications, without compromising quality

Applications

- Ar purity
- Crude Ar
- He purity

KA6000plus
Rackmount process gas chromatograph

Based on our GCSense platform, this high-quality solution is ideal for the integration of medium complexity GC configurations, where up to 5 valves and up to 2 detectors are required. What's more, a large touchscreen display makes it easy to operate.

Features

- 4U 19 inches rackmount configuration
- Up to 4 isothermal zones
- Up to 5 chromatographic valves
- Up to 2 gas detectors

Applications

- C_1-C_4 and N_2O in O_2
- O_2 purity
- N_2 purity

KA8000plus
Our most advanced rackmount process gas chromatograph

Our most advanced solution, the KA8000 series is based on the iMOv platform. Its modular oven design allows for 6 GC valves, 2 detectors and multiple parallel chromatographic channels to be integrated and, it even offers a heated valve box and a ramping oven.

Features

- Up to 2 gas detectors and up to 4 with SePdd Quattro
- Up to 6 thermal zones, isothermal and ramping oven capability
- Ambient or heated valve capability
- Up to 6 chromatographic valves
- All key GC components accessible from the front panel, for easy maintenance
- Rackmount configuration
- Auto-sampler option

Applications

- Trace permanent gas in bulk gases
- Xe / Kr purity
- Sulfur in air
- BTEX in air
- Greenhouse gas
- Electronic bulk gas (also with argon carrier)
- H_2 purity

KA34X Series
Redefining Trace Oxygen Measurement

Our ultra-trace oxygen analyzer delivers exceptional **stability, accuracy, and uptime at the lowest detection levels**, while minimizing maintenance and operator intervention. **Automated electrolyte replenishment** enables reliable ppb-level measurements over extended periods, keeping continuous processes running without interruption. This performance is driven by a patent-pending, purged cathode, non-depleting coulometric sensor. To ensure complete confidence in every reading, an optional embedded sonic-orifice dilution system provides true trace-level calibration, eliminating ppm-level extrapolation errors and delivering accurate calibration directly at just a few ppb.

Features

Ultra-trace precision

- **True zero stability** with our purged-cathode design (patent pending) that blocks ambient O_2 ingress.
- **Purged gas can be generated internally** from sample gas or from external source.
- **Uncompromising measurement accuracy** with built-in optional sonic-orifice calibration system for true ppb calibration and a purged electronics flow controller.
- **UHP sample integrity guaranteed** with a leak-free stream-selection system using CVProducts (an ASDevices division) patented purged PLSV valve.

Low maintenance

- **No weekly checks, no top-ups:** a built-in deionized water (DI) reservoir with automatic level control enables year-long, worry-free operation.
- **Non-depleting sensor technology** for long life and stable performance.
- **Auto-calibration** maintains accuracy while minimizing operator intervention.

Ease of use

- **Clean, spill-free electrolyte changes** thanks to a dual-valve design that keeps the sensor untouched.

Analytical specifications

	KA341	KA342	KA343	KA344	KA345	KA346
Measurement range	0–10000 ppm	0–1000 ppm	0–100 ppm	0–100 ppm	0–20 ppm	0–20 ppm
Limit of Detection (LOD)	2.5 ppm	250 ppb	50 ppb	3 ppb	200 ppt	45 ppt

Featured Highlights

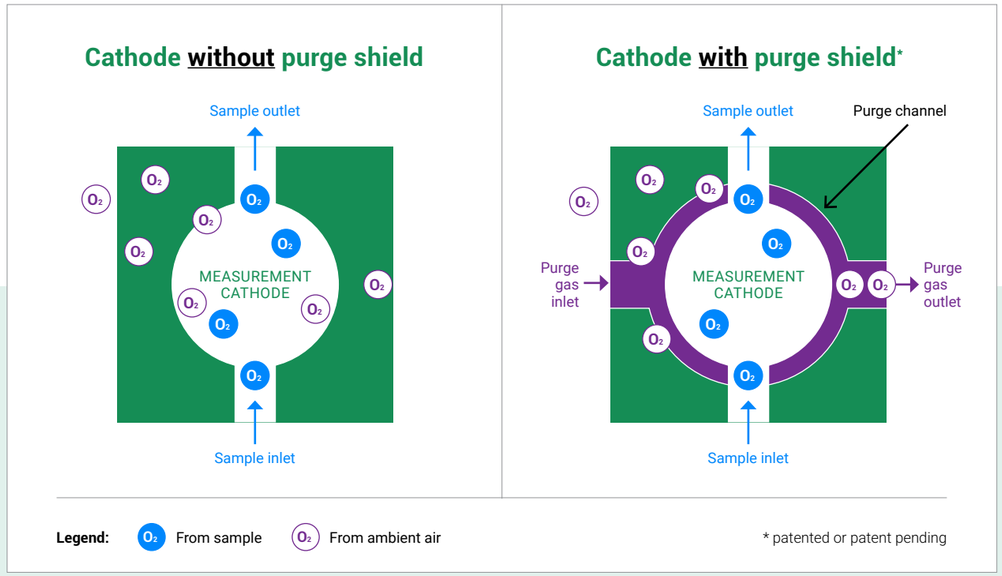
Purged cathode and electrolyte reservoir

O_2 Shielding for Unmatched Signal Integrity

Our dual-purge approach ensures unmatched signal stability, especially at ppb and ppt levels, and extends the lifetime of both the sensor and electrolyte.

Microscopic air leaks around the cathode housing can cause offsets, drifts, or unexplained signal spikes—problems that plague conventional designs. Our design eliminates this vulnerability with a fully purged cathode shield, creating a controlled barrier that blocks ambient oxygen from reaching the sensing elements.

We take protection even further by purging the electrolyte reservoir itself, preventing oxygen and CO_2 from diffusing into the electrolyte over time—a common issue in designs that leave the reservoir open to atmosphere.



Smart Electrolyte Control

One Fill. One Year. Zero Worry.

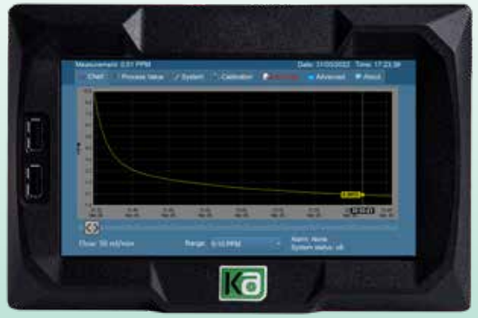
The KA34X series is designed to eliminate routine electrolyte maintenance and the risks that come with it. Unlike conventional analyzers that require frequent manual checks and refills, the KA34X series automatically maintains optimal electrolyte levels using an integrated pump and onboard deionized water reservoir. This enables up to one year of unattended operation, reducing maintenance while ensuring stable, reliable measurements.

When electrolyte replacement is required, service is fast and safe. A closed, valve-based drain and fill system allows clean replacement without removing or exposing the sensor—eliminating spills, contamination, and downtime. The result is a smarter, safer, and lower-maintenance analyzer that protects both your process and your data.

ANALYZERS

N2Sense — Trace N2 analyzer

Simply the best Online N_2 analyzer. The new industry benchmark.



N2 in Argon/Helium analyzer
Based on our enhanced plasma discharge (Epd) sensing technology and a proprietary spectral compensation algorithm, the N_2Sense offers the best performance in the smallest package.

Features

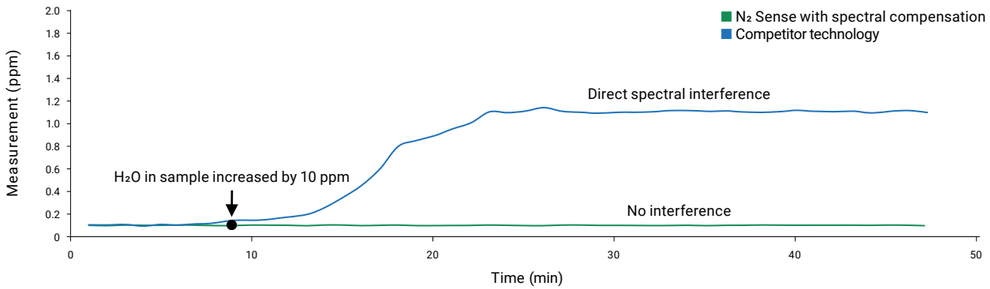
- < 1 ppb LOD: 10x lower detection limit than competitors' instruments
- 0 - 1/10/100 ppm standard range (up to 1% available)
- Argon, helium or dual background
- Ultra-stable reading
- Proprietary leak-free flow controller design
- Interference free: based on spectral compensation technology

Applications

- Separation plants
- Chemical plants
- Argon purification plants
- Helium liquefaction plants
- Process control
- Steel industries
- Semiconductor plants
- Gas management systems
- Specialty gas laboratories
- Leak testing
- Welding control
- Glove box
- Cryogenic truck loading stations

Spectral compensation

With traditional plasma emission technologies, flow and ambient pressure variations cause measurement errors due to a change in plasma power distribution. Our proprietary embedded algorithm overcomes this by continuously adjusting the power distribution, compensating for the bremsstrahlung (plasma-based emission) fluctuation. The result is the cancellation of flow and pressure effects on the plasma baseline emission. Spectral compensation is the latest breakthrough to eliminate H_2O interference. It surpasses the H_2O doping method introduced in the K2001 by M. Gamache in the 1995.



HCSense

Trace hydrocarbon analyzer

Based on our eFID sensing technology and high-end eSense electrometers, the HCSense offers the best performance in the smallest package.

Features

- Based on our high sensitivity eFID detector
- < 10 ppb LOD
- Ultra-stable reading with eSense electrometer amplifier
- All flow electronically controlled with our purged EPC and flow controller

Applications

- THC in liquid oxygen
- THC in argon, helium, nitrogen, hydrogen
- THC in CO_2

O2Sense

Oxygen analyzer

Based on a high-quality electrochemical cell, the O_2Sense offers the best performance in the smallest package.

Features

- Based on galvanic electrochemical fuel cell
- Trace or percent versions
  - 0-1/10/100 ppm range (up to 1000 ppm available)
  - 0-100% range
  - ppt sensitivity version coming soon
- Sensor life between 20 and 24 months
- All flow electronically controlled with our purge flow controller

Applications

- Trace oxygen quality control
- Percentage oxygen measurement

Intelligent Gas Calibration/Dilution System (GCS)

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.

Typical configuration

Features

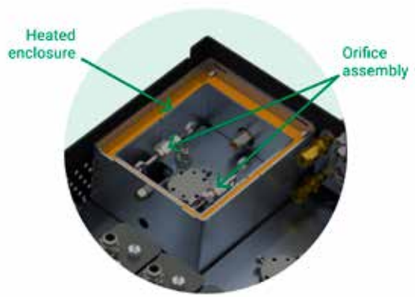
- Sonic orifice technology with high dilution ratios from 1:2 to 1:3500 (custom up to 1:10000)
- High precision (<0.5% rel.)
- High sample integrity with purged electronics pressure regulator
- Advanced mathematical model to enhance precision and stability
- Heated flow path up to 200°C
- User configurable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

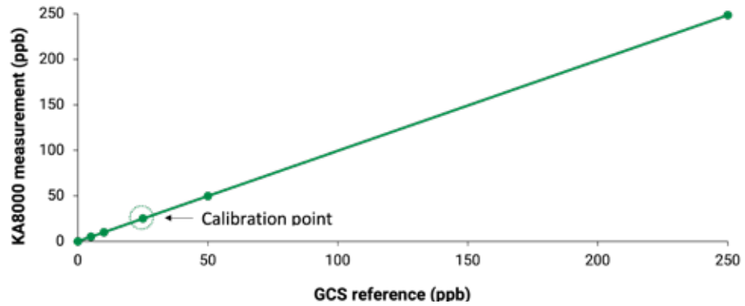


Benefits of calibrating with ASDevices GCS

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. The GCS was designed for that very reason. Instead of calibrating our instruments with widely available 5 to 10 ppm standard calibration gas, we use our GCS 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 purge leap sealing valve (PLSV) that delivers unsurpassed sample integrity.

Features

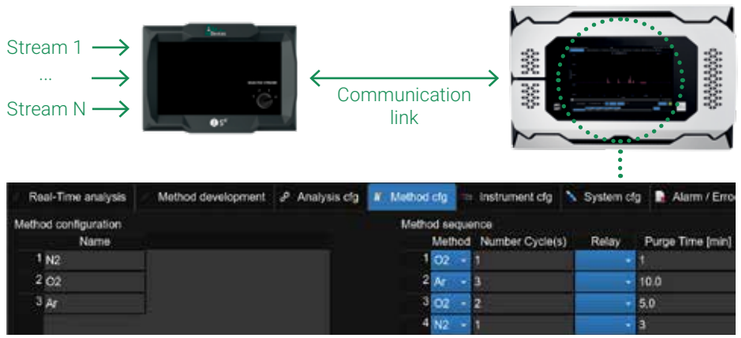
- Based on purge lip sealing valve (PLSV) technology
- PLSV technology eliminates cross-port leaks
- 2, 4, 6 and 8 sample inlet versions available
- Manual, automatic or remote control
- No dead or unswept volume
- Stand-alone or integrated with GC platform

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

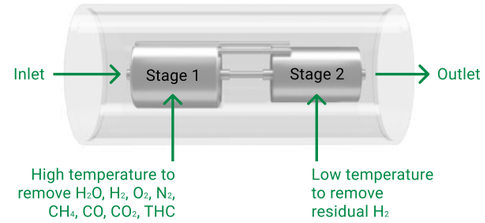
- Gases purified: Ar, He, Ne, Xe, Kr (N_2 is also an option)
- Impurities removed: H_2O, H_2, O_2, N_2, CH_4, CO, CO_2, hydrocarbons
- Achievable impurity level: < 1 ppb (< 5 ppb single vessel version)
- Nominal flow: 300 ml/min, 1000 ml/min and 5000 ml/min
- Lifetime at nominal flow: 2 years
- Proprietary 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.



Intelligent Plasma Assisted Purification System (PAPS) also available

Features in addition to Pure:

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

Key applications

Air separation market leaders rely on ASDevices solutions to improve their argon process efficiency

The air separation industry had been relying on outdated technology and instruments; it was time for a much-needed overhaul. 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.

Argon sample

Quality

Permanent gases analysis

The compact, cost-effective choice

For a complete argon purity solution, the KA5000plus can be paired with our new KA34X trace O_2 analyzer. Together, they provide continuous, high-sensitivity monitoring of key impurities. The KA34X also offers an optional Al_2O_3 sensor for trace H_2O measurement, extending analytical capability and ensuring total quality control.

Solution Features

KA5000Plus gas chromatograph

- Low cost argon carrier (helium for argon impurity)
- Long lifetime CVP valves
- Based on Enhanced Plasma Discharge Detector
- Compact form factor

KA34X Continuous gas analyzer

- Purge cathode non-depleting O_2 analyzer
- Automated electrolyte management

Application specification

Impurity	Technology	Typical analytical range*	Limit of detection*
H_2, N_2, CH_4, CO, CO_2, NMHC	GC-EPD	0-100 ppm	1 ppm
		0-10 ppm	0.1 ppm
		0-1 ppm	0.01 ppm
O_2	Non-depleting coulometric	0-100 ppm	0.05 ppm
		0-100 ppm	0.003 ppm
H_2O	Al_2O_3	0-100 ppm	0.5 ppm

* Contact factory for custom range and LOD.

The KA5000plus crude argon — Process control
Results 20X Faster Than Competition

Air separation market leaders rely on ASDevices solutions to improve their argon process efficiency

If you're looking to get a higher output of argon – all while reducing operating costs – look no further than the KA5000plus plug & play crude argon analyzer. This ultra-fast gas analysis solution will help you gain better and faster control over your existing air separation plant argon recovery process. No matter the type of air separation plant, integrating the KA5000plus into a process control loop is easy. Plus, with the escalating cost of energy and increasing demand for argon, this solution is the reliable, affordable choice.

Based on KA5000plus

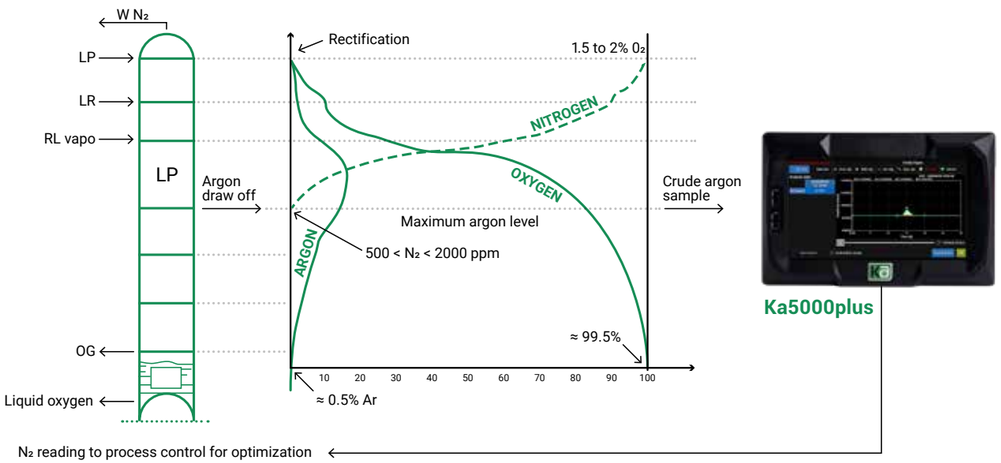
Impurities

N_2

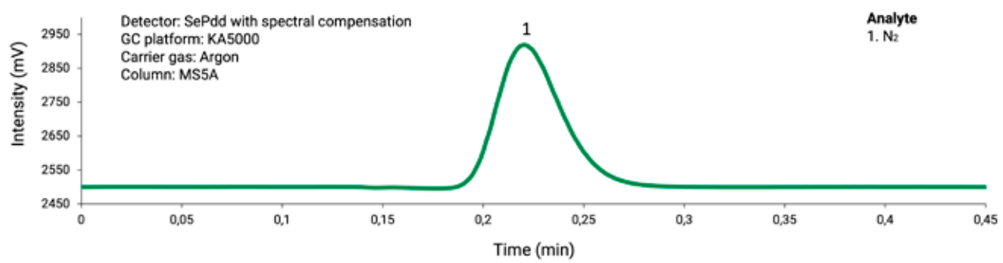
Features

- Fast analysis (results in just 30 seconds, 15 seconds optional)
- Enhanced plasma discharge sensing technology with spectral compensation
- Purge leap sealing valve (PLSV) technology: lasts 3X longer than any other valve
- Typical range : 10 ppm up to 5%
- No consumables
- The most compact gas analysis solution on the market

Argon extraction from low pressure distillation column



50 ppm N2 Crude Argon



Continuous Trace N2 analysis

Simply the best Online N_2 analyzer. The new benchmark of the industry.

Get better performance and signal stability with our compact, online trace argon/helium N_2Sense analyzer powered by our patented enhanced plasma discharge (Epd) technology. As other commercially available analyzers are using a single wavelength measurement, the N_2Sense uses a combination of unique stabilizing/ focusing electrodes and electron injection electrodes with the spectral compensation optical measurement.

Based on KA5000plus

Impurities

N_2

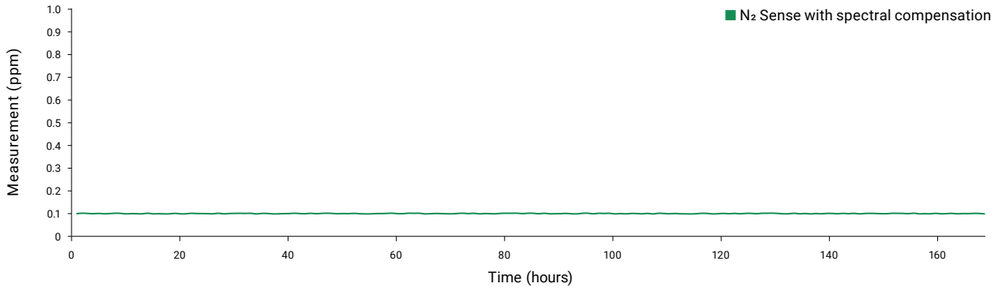
Features

- The only interference-free N_2 analyzer with spectral compensation
- Ultra-stable
- High sensitivity < 2 ppb
- The most compact solution on the market
- Proprietary leak-free, purged-flow controller design

Key specifications

- Limit of detection (LOD): < 2 ppb
- Measurement range: 0-1 ppm, 0-10 ppm and 0-100 ppm (other available)
- Drift: < 0.5% range in use

N_2 Sense chart



Oxygen sample

Safety

Based on KA5000plus

Online control THC in O2

The HCSense is built on our renowned Sense series platform. It incorporates our eFID and high quality eSense electrometer to offer an unsurpassed performance.

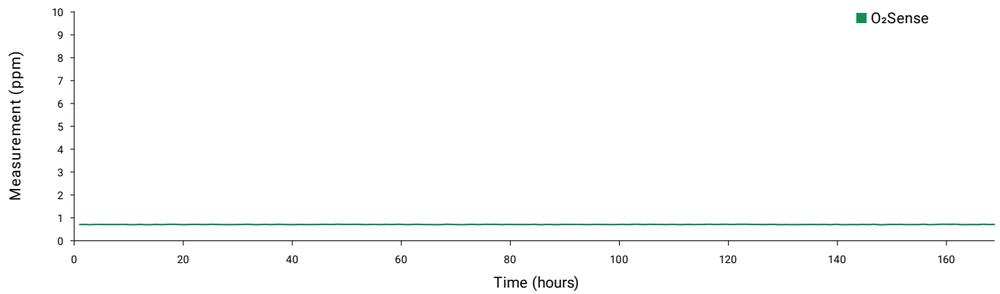
Impurities

Hydrocarbons

Features

- Based on high sensitivity eFID detector
- Ultra-compact, fits two Sense series instruments side by side in a 19 inches rackmount
- Low drift, high-end eSense electrometer
- Heated FID detector for enhanced stability
- Electronics flow controller (Sample, H_2, Air)
- 10 ppb LOD (CH_4 equivalent)
- Build-in flame detection and fuel shutoff relay
- Industrial grade touchscreen display
- Isolated 4-20 mA outputs, RS-232/485 and Ethernet
- General alarm status and alarm relays
- IIoT ready
- Remote monitoring
- Remote control
- Modbus

O_2Sense chart



C1 to C4 and N2O analysis with Epd technology

Based on KA6000plus

Breakthrough technology for safer light hydrocarbon analysis

The analysis of light hydrocarbons CO, CO_2 and N_2O is a very common air separation application. For decades, the flame ionizer detector (FID) had been the reference for measuring air separation units (ASU), even though the combination of a flame and O_2 is hazardous. Fortunately, we've changed all that. Working closely with ASU designers, we've developed the KA6000plus process chromatograph and a now patented enhanced plasma discharge (Epd) technology that can use a nitrogen carrier gas, argon or helium, and has a high sensitivity to safely measure C_2H_2. N_2O_2, Co and CO_2. Eliminating the need for a gas analysis methanizer was a true breakthrough for measuring ASUs.

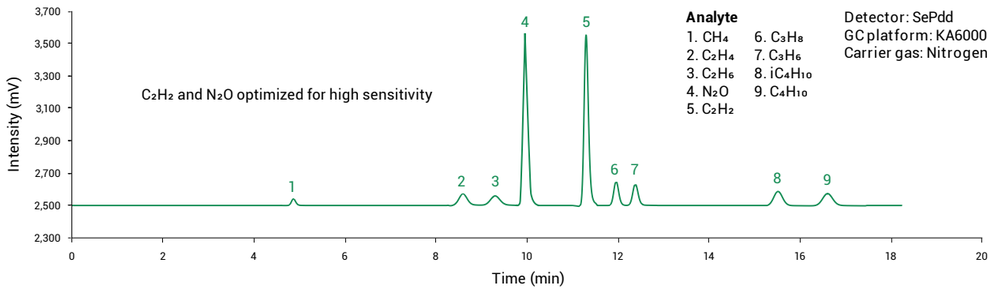
Impurities

C_1 to C_4, N_2O and CO_2 (optional)

Features

- Safe: enhanced plasma discharge (Epd) technology only uses inert carrier gas, so there's no hydrogen or hazardous flame
- FID alternative: only one detector for hydrocarbons, N_2O, CO and CO_2, without the need for a methanizer
- No separate instrument for N_2O
- High sensitivity: 20 ppb (lower optional) limit of detector for C_2H_2

C_1 to C_4 and N_2O in O_2 with Epd



C1 to C4 analysis with eFID

Based on KA6000plus

Measuring trace hydrocarbons in O_2 is a safety requirement for air separation plants. The level of C_2H_2 must be measured accurately and at low level. Using our innovative high sensitivity eFid detector and high-end electrometer, you can easily measure C_2H_2 down to 20 ppb. As we care about quality and performance, all instruments are validated using our GCS high precision dilution system.

Impurities

C_1 to C_4 (optional N_2O with Epd sensing technology)

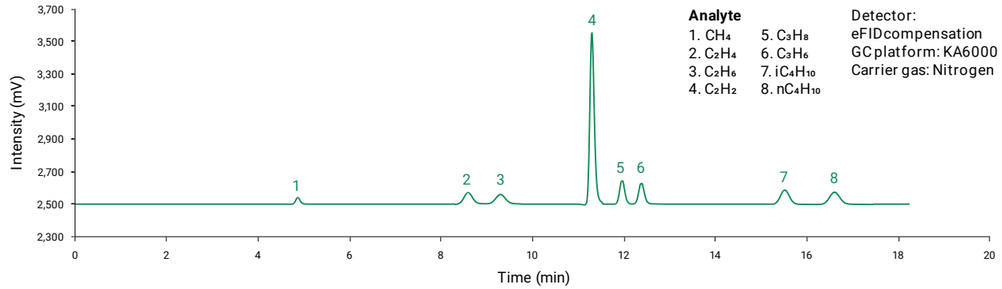
Features

- High sensitivity ASDevices eFID detector
- Based on PLSV valve technology, 3X longer lifetime than other valves

Key specifications

- Measurement range: 2 ppm for C_2H_2 to 1000 ppm for CH_4 (ranges are user/application dependent)
- Limit of detection (LOD): down 20 ppb for C_2H_2
- Matrix: Oxygen
- Carrier gas: Nitrogen

C_1 to C_4 in O_2 with eFID



Oxygen sample

Quality

Based on KA6000plus

Permanent gases analysis

Oxygen is one of the main bulk gases produced by Air Separation Plants (ASU). We offer a complete chromatographic solution to qualify the quality of your product. Due to our high sensitivity enhanced plasma discharge (Epd) sensing technology and high leak integrity PLSV valve, we have the solution for all O_2 quality grades. From UHP O_2 with < 1 ppb limit of detections (LOD) up to simpler solutions with hundreds of ppb and even ppm LOD for HP and other oxygen grades.

Impurities

H_2, N_2, CH_4, CO, CO_2, Ar, NMHC

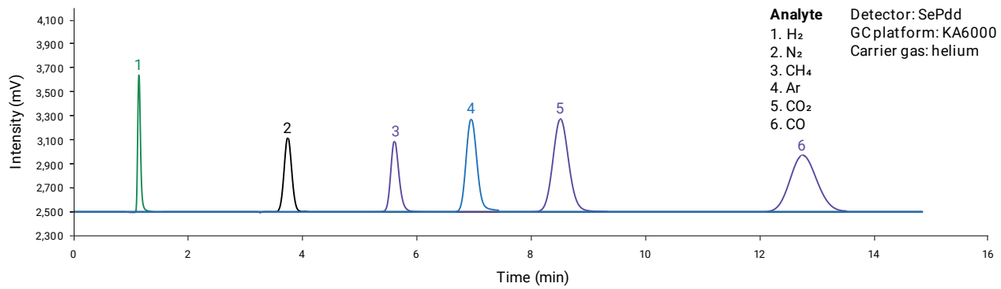
Features

- Enhanced plasma discharge (Epd) technology
- High sensitivity: down to < 1 ppb LOD

Key specifications

- Measurement range: 1 ppm up % level based on O_2 grade requirement
- Limit of detection (LOD): < 1 ppb and above based on O_2 grade requirements
- Matrix: Oxygen
- Carrier gas: Helium or Argon

1 ppm permanents in Oxygen



Nitrogen

Quality

Permanent gases analysis

For a complete nitrogen purity solution, the KA5000plus can be paired with our KA34X trace O_2 analyzer. Together, they provide continuous, high-sensitivity monitoring of key impurities. The KA34X also offers an optional Al_2O_3 sensor for trace H_2O measurement, extending analytical capability and ensuring total quality control.

Solution Features

KA6000Plus gas chromatograph

- Low-cost argon carrier (helium for argon impurity)
- Long lifetime CVP valves
- Based on Enhanced Plasma Discharge Detector
- Compact form factor

KA34X Continuous gas analyzer

- Purge cathode non-depleting O_2 analyzer
- Automated electrolyte management

Application specification

Impurity	Technology	Typical analytical range*	Limit of detection*
Ar, H_2, N_2, CH_4, CO, CO_2, NMHC	GC-EPD	0-100 ppm	1 ppm
		0-10 ppm	0.1 ppm
		0-1 ppm	0.01 ppm
O_2	Non-depleting coulometric	0-100 ppm	0.05 ppm
		0-100 ppm	0.003 ppm
H_2O	Al_2O_3	0-100 ppm	0.5 ppm

* Contact factory for custom range and LOD.

All in one multi-gas quality control solution for Ar, N2, O2 quality analysis

Quality

Based on KA8000plus

Permanent gases analysis in Ar, N2 and O2

Next-level detection limits

Boasting the lowest detection limits, this cutting-edge solution will allow you to generate the most accurate quality certificate, every time. As more and more industrial applications require ultra-high purity gases, having a turnkey gas quality certification solution gives you an important competitive edge. Thanks to our patented enhanced plasma discharge (Epd) sensing technology, high quality components, advanced signal processing and unsurpassed analytical performance, this solution is a leap forward in the GC field.

Impurities

H_2, O_2, N_2, CH_4, CO, CO_2, Ar, Ne

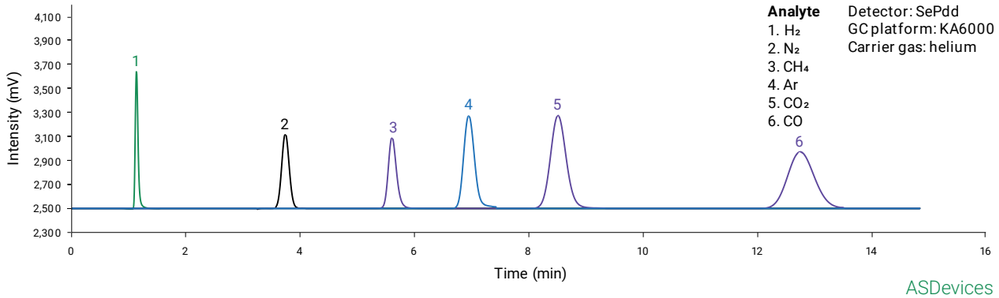
Features

- Down to < 15 ppb LOD based on Epd technology (< 5 ppb with eLOD)
  - Other LOD available (down to < 1 ppb)
- One single instrument for all gas matrixes
- Lowest carrier gas consumption in the industry
- Data reporting software with report-producing capabilities

Key specifications

- Measurement range: Standard 10 ppm or 100 ppm (other ranges available)
- Limit of detection (LOD): < 15 ppb
- Matrix: Ar, N_2,O_2 (other possible matrixes H_2, He, Air, CH_4, CO, CO_2)
- Carrier gas: Helium

1 ppm permanents in Oxygen

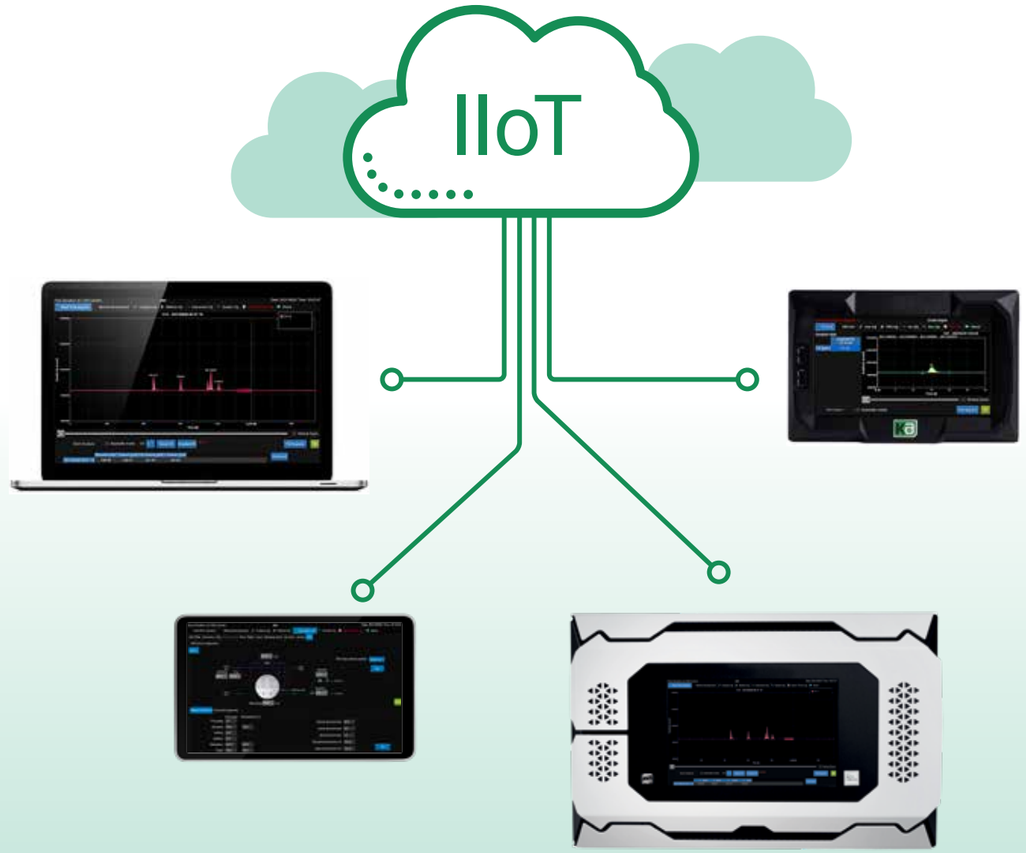


IIoT ready: Designed for the future

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, with any device

- Remote monitoring
- Remote support



Xenon and Krypton purity analysis

Quality

Based on KA8000plus

Permanent gases and key impurities analysis

The need for UHP Krypton and Xenon is increasing globally. We have developed and validated our analytical solution with global Xenon providers. Our solution, like all others we do, was proven to be precise and reliable.

Impurities

SF_6, CF_4, CO_2, N_2O, C_2F_6, Xe, Kr, H_2, Ar, O_2, N_2, CH_4, CO

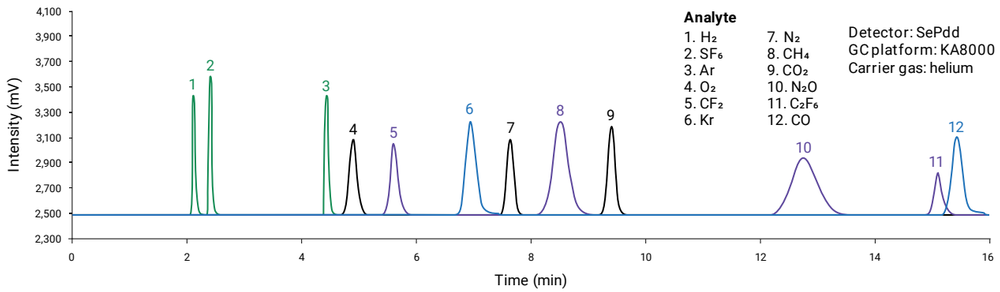
Features

- Based on high sensitivity enhanced plasma detector (Epd) technology
- Based on PLSV valve technology
- Lowest carrier gas consumption in the industry

Key specifications

- Measurement range: Standard 10 ppm or 100 ppm (other ranges available)
- Limit of detection (LOD): < 10 ppb
- Matrix: Xe or/and Kr
- Carrier gas: Helium

10 ppm reference gas in Xe



Trace moisture analysis in permanent gases

Quality

Based on KA8000plus

Simplify your analytical system: why a separate instrument when you can have an all-in-one solution?

Our objective is to make life easy for our customers and offer complete and well-integrated solutions. We are now offering H_2O analysis in various sample matrixes based on our ultra-sensitive and selective enhanced plasma discharge (Epd) sensing technology.

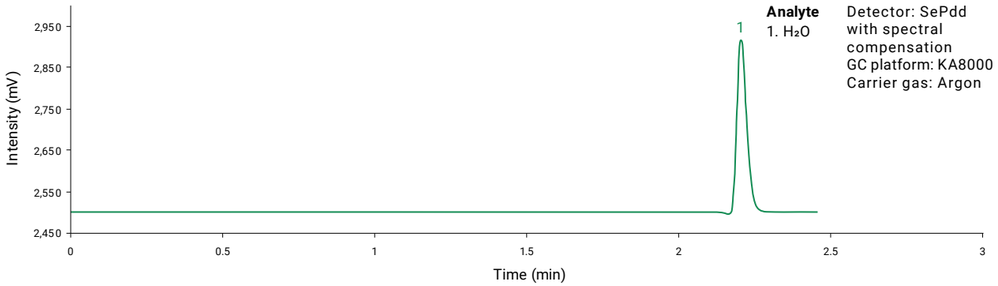
Impurities

H_2O

Features

- High sensitivity Enhanced plasma discharge (Epd) sensing technology with H_2O specific filter
- PLSV valve technology optimized for H_2O analysis
- No cross interference
- Compatible with H_2, O_2, N_2, CH_4, CO_2, He, Ar and many other sample matrixes
- < 50 ppb limit of detection
- < 1 ppb with SCS sample concentration system

10 ppm H_2O in Argon



KEY APPLICATIONS

Pre-configured automated analytical truck-loading system

Quality

The air separation industry uses various analytical systems to qualify gas quality before it's loaded into delivery trucks. Our system introduces a new concept to combine both chromatographic and continuous gas analysis. Unmatched by competitors, our unique solution is made possible through our innovative product ecosystem that offers the most performing and cost-effective system on the market.

- Designed to be simple to use by everyone
- System is shipped fully configured and tested
- Fully automated analysis sequence:
  - Chromatography methods preconfigured
  - Automated sampling system with pre-programmed purge
- Data reporting software with report-producing capabilities
- IIoT ready for remote control monitoring
- 4-20 mA outputs for each analyte
- Optional modbus

Chromatographic measurement and main control interface

- Based on KA8000plus all-in-one multi-gas quality configuration
- Simple, fully configured user interface
- Based on Epd sensing technologies

Continuous measurements

- Based on ASDevices integrated CGA/GC solution
- Online O_2, THC, H_2O and CO_2 measurement capabilities

Sampling system

- Based on S4 sampling system
- Automated analysis with KA8000plus direct interface communication
- Best leak integrity on the market

Key specifications

- Gas matrix: Ar, O_2, N_2 and others (H_2, CH_4, He, CO_2, Air, etc.)
- Impurities: H_2, O_2, N_2, CH_4, CO, CO_2, Ar, H_2O and others (He, Sulfurs, etc.)
- Standard Analytical range: 0-10 ppm
- Other ranges available: 250 ppb up to 1%
- Standard Limit of Detection: 10 ppb (< 1 ppb and above available, based on range)

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.

CVP | An ASDevices division

Patented

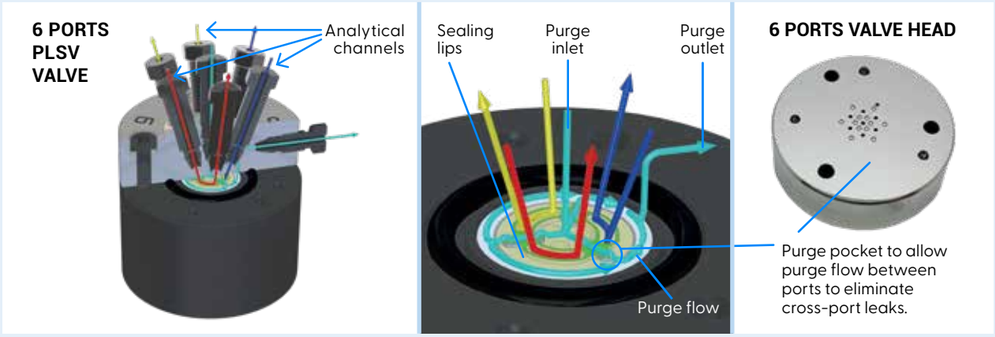
Purged Lip Sealing Valve (PLSV)

The most reliable and durable analytical valves for UHP analysis sample and carrier gas integrity

- **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.

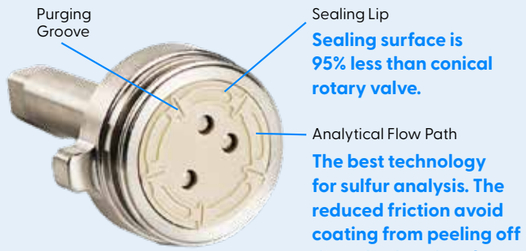
Leaks Are Virtually Impossible by Design

With its purging channels located between two adjacent valve channels and valve head purging pockets machined into the valve head, our PLSV's unique, patent-pending 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.



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.



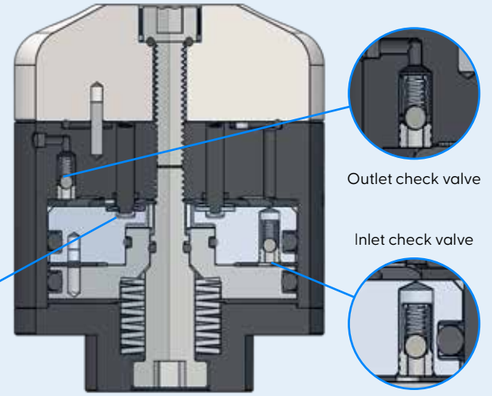
Patented

Purged Pulse Diaphragm Valve (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.

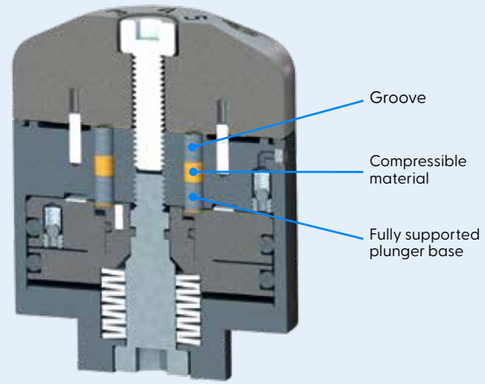


Flexible Plunger Seat

Flexible and compressible plunger seat providing movement of freedom to plunger. The result, uniform sealing force on the diaphragm and extended lifetime.

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.



PATENTED

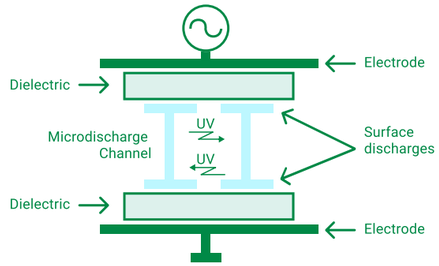
Enhanced plasma discharge (Epd)

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.

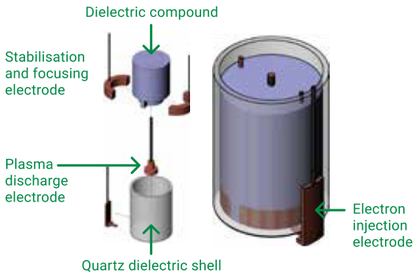


Compound electrode

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



PATENTED

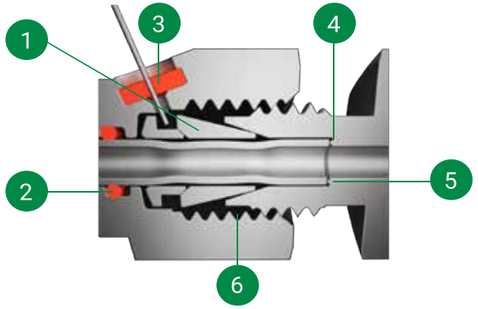
LipLOK fitting

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. **Septum**
   Leak detection sniffing with syringe
4. **Coated sealing ring**
   First level of sealing
5. **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.

Asynchrone
Faster analysis

With ASDSense asynchronous technology, get faster and more precise results

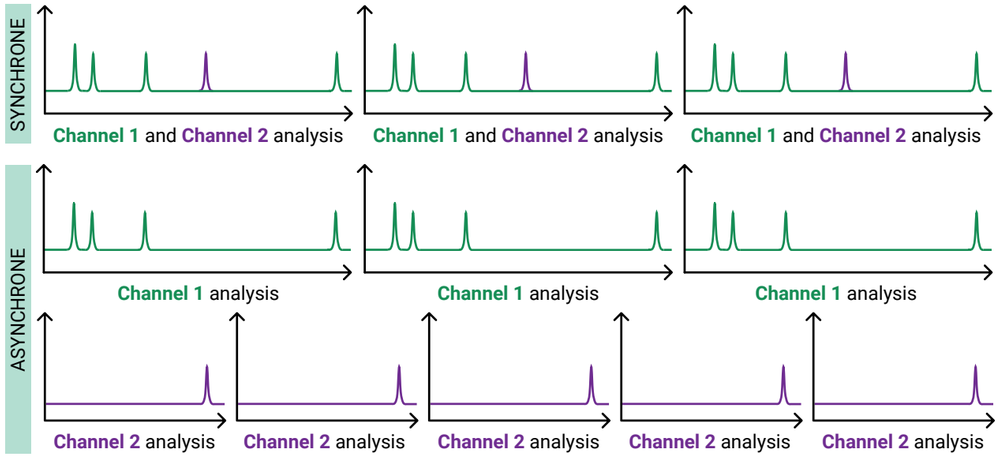
ASDSense is the first process and only GC software to use such an advanced feature. It is very common to ask a process gas chromatograph to run multiple analysis methods in parallel. However, traditional GC software are synchronous and not allowing independent method analysis. If one channel requires a 5-minute analysis and another requires a 10-minute analysis, the shorter cycle is slowed down by the longer one. This is a major limitation! As we have always wanted to offer best-in-class solutions, our new ASDSense process GC software supports asynchronous chromatography allowing you to run several analysis in parallel. It will save you time and boost productivity – guaranteed!

Benefits

- Faster data throughput
- Allow faster analysis of key impurities such as N_2 for leak detection
- Improved sensitivity with the combination of faster analysis and eLOD algorithm

Asynchronous (parallel) chromatographic analysis

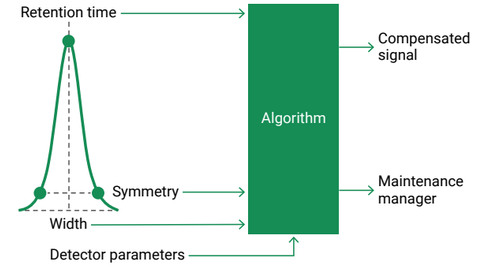
In chromatography, it's common to have parallel channels. Traditional GC software being synchronous, it's not possible to analyze each one independently. If one channel requires a 5-minute analysis and another requires a 10-minute analysis, the shorter cycle is slowed down by the longer one, and this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



StabiliPeak technology
Make your GC failsafe

A quantum leap in measurement precision, stability, and robustness

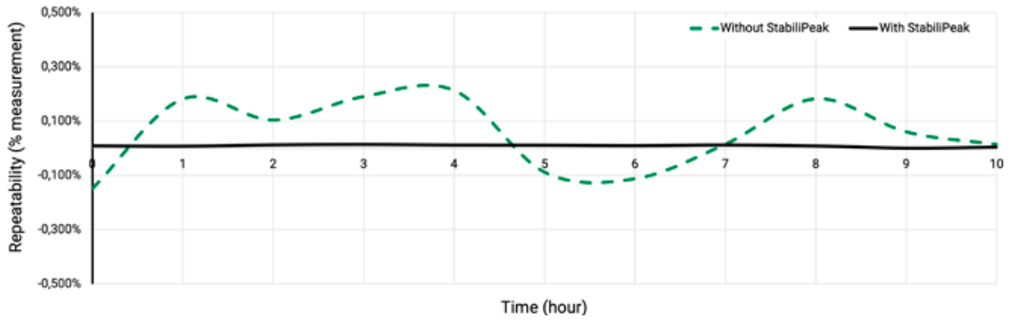
ASDevices is introducing StabiliPeak. This patent pending algorithm has been developed and tested during a 2-year R&D program to offer ultra-precise, ultra-stable measurements in the medical market, to precisely detect pathologies such as cancer using VOCs in exhaled breath. It has been validated with Spira Innovations, a company specializing in exhaled breath analysis. The benefit of this algorithm goes well outside the medical market. It is a technology breakthrough for the analytical process industry as well as the semiconductor market.



Benefits

- No measurement drift caused by
  - Ambient temperature variations
  - Ambient pressure variation
  - Analytical components aging
- Avoid false positive or negative measurements
- Improve robustness: provide a continuous health check of the instrument

Measurement stability improvement



Note: This technology is optional will any of our chromatographs.

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

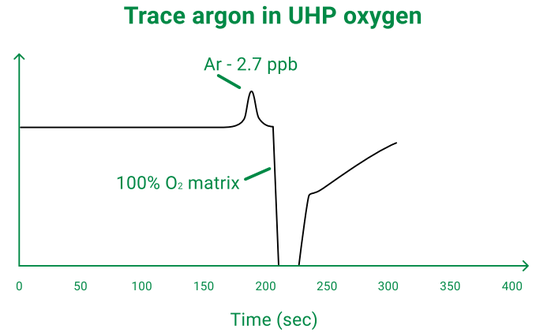
FePID

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

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

Proprietary ArDSieve material

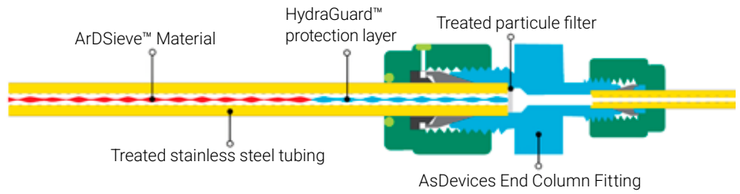
The material used in the ArDSieve column is the result of an intensive R&D program and decades of experience. A combination of clinoptilolite, an ion exchanged chabazite, and proprietary treatments, this breakthrough column separates argon and oxygen at room temperature.

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.



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

Visit **www.asdevices.com/documentation**

Contact us today!

Are you interested in ASDevices' products? Our team is at your disposal to answer your questions and evaluate your needs.

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