

# NOVA CHROM 9000

## Gas Chromatograph Systems



Introducing the newest range of Gas Chromatographs. The NovaCHROM 9000 ASU Gas Chromatograph range is specifically focussed on the Air Separation Plant sector that produces specific gases worldwide for a wide range of processes.

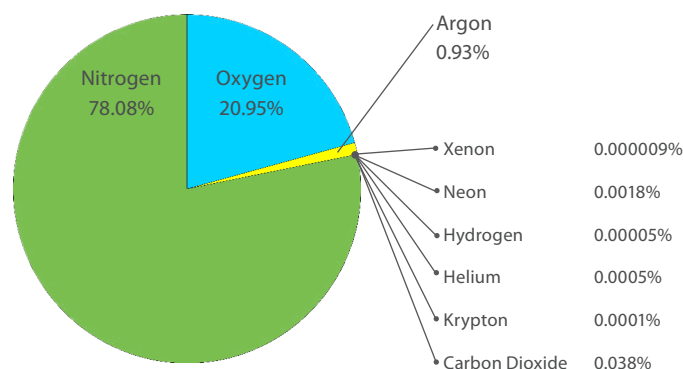
An Air Separation Unit separates atmospheric Air into its primary components which are typically Nitrogen (<78%), Oxygen (<21%) and sometimes also Argon (<1%) with some other rare inert gases like Neon, Krypton and Xenon. Some traces of Hydrocarbons, CO<sub>2</sub> and other impurities also exist.

There are two main type of ASU technologies: Cryogenic Process or Power Swing Adsorption (PSA). Depending on the technology required, there is the requirement to monitor the quality of the produced gases during each stage of the process.

The dedicated NovaCHROM 9000 ASU GC System is straightforward to use and set-up using the large interactive colour touch screens. The new Electronic Pressure & Flow Management System has ensured all functionality is effortless and easily accessible. The constant monitoring of critical status information such as flows, pressures and temperatures is readily available to the operator and is backed up with the Alarm activation system which allows feedback locally to other locations such as the Control Room or DCS. This information allows all personnel to know that the GC is performing to specification with the peace of mind that goes with it. Therefore the NovaCHROM 9000 ASU provides a top class performance to you at all times.

The AGC Engineering Team will custom design an analytical solution to meet your application using a selection of industry-proven Detectors for which we are a leading supplier of worldwide. Each NovaCHROM 9000 GC System is equipped with specific chromatography components depending on the application. In order to guarantee a contamination free, precision or UHP quality chromatographic separation, "high purity" rotary valves in a purged box (for ADD and DID detectors) are used to prevent leakages. 1/8" Stainless Steel columns are fitted either with Swagelok® or VCR compression fittings and combined with 1/16" stainless steel tubing and plumbing accessories throughout (electropolished if necessary). Other materials such as Teflon or Hastelloy may be used, as required, to eliminate interference from the matrix gas or to mitigate the effects of corrosive elements. Moreover, the packed columns with their multiple column ovens and individual temperature controllers also maintain exceptional stability, sensitivity, accuracy and repeatability.

## ppb, ppm and % analysis in Air Separation Units



## Applications

- CH<sub>4</sub>, C<sub>2</sub>H<sub>2</sub>, C<sub>2</sub>H<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>, C<sub>3</sub>+ & THC in Oxygen or in Air
- CH<sub>4</sub>, C<sub>2</sub>H<sub>2</sub>, C<sub>2</sub>H<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>, C<sub>3</sub>H<sub>6</sub>, C<sub>3</sub>H<sub>8</sub>, C<sub>4</sub>+ & THC in Oxygen or in Air
- C<sub>2</sub>H<sub>2</sub> in Oxygen or in Air
- CH<sub>4</sub> & non CH<sub>4</sub> in Oxygen or in Air.

FID

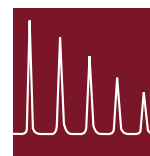
- H<sub>2</sub>, N<sub>2</sub>, CH<sub>4</sub>, CO, CO<sub>2</sub> in Oxygen
- H<sub>2</sub>, Ar, N<sub>2</sub>, CH<sub>4</sub>, CO, CO<sub>2</sub> in Oxygen
- H<sub>2</sub>, N<sub>2</sub>, CH<sub>4</sub>, CO, CO<sub>2</sub>, C<sub>2</sub>H<sub>2</sub>, C<sub>2</sub>H<sub>4</sub>, C<sub>2</sub>H<sub>6</sub> in Oxygen
- H<sub>2</sub>, Ar/O<sub>2</sub>, CH<sub>4</sub>, CO, CO<sub>2</sub> in Nitrogen
- H<sub>2</sub>, Ar/O<sub>2</sub>, N<sub>2</sub>, CH<sub>4</sub>, CO, CO<sub>2</sub>, Xe, Ne in Krypton
- H<sub>2</sub>, Ar/O<sub>2</sub>, N<sub>2</sub>, CH<sub>4</sub>, CO, CO<sub>2</sub>, Xe, Kr in Neon
- H<sub>2</sub>, Ar/O<sub>2</sub>, N<sub>2</sub>, CH<sub>4</sub>, CO, CO<sub>2</sub>, Kr, Ne in Xenon.

DID

- H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, CH<sub>4</sub>, CO, CO<sub>2</sub> in Argon

ADD

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INSTRUMENTS  
Gas Chromatography since 1965



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## Range of Detectors

### Flame Ionisation Detector-FID

The AGC Flame Ionisation Detector (FID) is used to measure concentrations of hydrocarbons within a sampled gas. The presence of hydrocarbons is detectable by burning the sampled gas in an air-hydrogen flame. Burning just pure hydrogen with air produces only small amounts of ionisation. The presence of hydrocarbons in the sampled gas, when burnt with an air-hydrogen mix causes increased levels of ionisation.

The ionisation occurs a result of the carbon atoms present in the sampled gas. The level of ionisation is proportional to the number of carbon atoms within the sample.

Linearity	$>10^6$
Sensitivity	$<10\text{ppb}$ of $\text{CH}_4$
Response time	$<0.5$ seconds ( $T_{90}$ )

### Discharge Ionisation Detector-DID

The AGC Discharge Ionisation Detector (DID) has outstanding stability and performance giving low ppb measurements. Based on using a non radioactive, universal and concentration dependent design, the detector generates high energy photons through an electrical discharge in Helium. The metastable Helium then ionises all components except Helium.

Linearity	$>10^6$
Sensitivity	$<1$ ppb of $\text{CH}_4$ (APPLICATION DEPENDENT)
Response time	$<0.5$ seconds ( $T_{90}$ )

### Argon Discharge Detector-ADD

The AGC Argon Discharge Detector (ADD) uses a high energy electromagnetic field through which the gas passes, thus producing an ionising effect. This process transforms the gas to a plasma state and a by-product of this is the emission of photons of light. As the sample component elutes from the column, the light intensity is altered and this light emission can be monitored by a sensitive, tuned photo-diode. The output from the photo diode is converted to a millivolt signal which can be measured on a data capture system, such as the AGC TrendVision PLUS Chromatography Software.

Linearity	$10^3$	
Sensitivity	$\text{H}_2$	10 ppb
	$\text{O}_2$	20 ppb
	$\text{N}_2$	15 ppb
	$\text{CH}_4$	15 ppb
	CO	200 ppb
	$\text{CO}_2$	25 ppb

\* Repeatability and Accuracy dependent on application.  
Contact us for more information.

## Features

- Detection to 1 ppb (application dependent)
- Large Colour 6.5" LCD Touch Screen
- Compact 19" Rack Design
- Fully Automated Use
- Integrated Configurable Alarms System
- Electronic Pressure Control of Carrier Gas
- Multi-Column Ovens with individual Temperature Control using different column switching technologies such as Backflush, Heartcut and Precut.
- Integrated Diagnostics System
- Data Handling Control by TrendVision PLUS
- Software of both the GC and its ancillary components e.g. as a sample multiplexer
- Increased Connectivity via RS-232, RS-485 and Field BUS communications
- Drop Down Front Panel for easy access to electronics
- Customised Chromatography Solutions  
Suited for space saving installations as single modules or mini systems
- Designed with industrial interfaces for rack integration as new cabinets or as replacement units
- Designed for both batch-type analysis and continuous monitoring
- Ideal for Process environments with Status Signal, Alarm contacts, remote operation requirements.

### NovaCHROM 9000 ASU GC System



## NovaSTREAM 6000 Gas Analyser

Complimenting the NovaCHROM 9000 ASU GC Systems is the new NovaSTREAM 6000 Gas Analyser. This analyser platform employs the latest advanced detector technologies and provides customers with the precise results they require with little effort. Using the large colour interactive touch screen, the NovaSTREAM 6000 analyser is straightforward to use and set-up with all functionality easily accessible and navigable with minimal training required.

With the integration of Flow Sensors, a Pressure Release Valve and 7 voltage free alarm relay contacts, including one for the sample flow, all critical monitoring is automated and provides peace of mind to the operator. Further verification is provided by voltage free contacts for switching in calibration gas inputs externally to support the auto-calibration routine. Both Calibration and Alarm records are maintained also with a fall-back option to restore factory settings. Therefore, the NovaSTREAM 6000 provides an exceptional performance at all times.

The precise results obtained from this analyser can be transmitted via an array of communication modules such as: 4-20mA (2 off), mV Signal, USB (2 off) and VGA outputs. Active 4-20mA, Ethernet, RS-232 and RS-485 outputs are also available as optional extras. This allows the analyser to be integrated seamlessly into all analytical infrastructures worldwide.



The modular design with a drop-down front panel for easy access to the electronics allows for trouble-free maintenance and servicing. It is both cost effective and reliable with a low cost of ownership due to the low gas and power consumption. The AGC Engineering Team will custom design and test an analytical solution to meet your application and all systems are designed with volume optimised pipe work using only 1/8" VCR face seal fittings. Therefore, this robust system ensures an excellent stability, sensitivity and a long working life.

The NovaSTREAM 6000 Analyser encompasses the following models and applications:

<b>NovaSTREAM 6000-N2</b>	N <sub>2</sub> in Ar or N <sub>2</sub> in He
<b>NovaSTREAM 6000-FID</b>	Total Hydrocarbons Analysis
<b>NovaSTREAM 6000-O2</b>	% and ppm O <sub>2</sub> Analysis
<b>NovaSTREAM 6000-TCO</b>	% Ar in O <sub>2</sub>

Please consult with the specific brochures for each of these instruments for further details.



This analyser system is also available for use in Hazardous Areas Zone 1 or Zone 2. Please contact AGC Instruments for further information.



## NovaPURIFIER

The AGC NovaPURIFIER Gas Purifier is recommended for use with the NovaCHROM 9000 ASU GC Systems and NovaSTREAM 6000 Gas Analysers for the ADD, DID and N2 Detectors. This 19" Rack (3U) Purifier links seamlessly with these instruments and guarantees a stable supply of zero calibration gas (purified to Grade N6.5 or better) with low ppb impurity levels. This ensures that consistent and highly accurate readings are achieved which, in turn, leads to a longer instrument life spans. Furthermore, better sensitivities are achieved which is essential for the successful operation of the detectors where ppb analyses are concerned. Please consult with the specific brochure for the AGC NovaPURIFIER. AGC Instruments can also discuss any other sample handling issues you may have.



## TrendVision PLUS Software

TrendVision PLUS is the latest release of the well recognised Chromatography Data Capture Software from AGC Instruments. Rugged industrial level modular and scalable hardware is used with an Embedded Windows Operating System. TrendVision PLUS provides a unified chromatography method whereby all settings are contained in a single method, including event tables, calibration tables and integration settings. In addition, this software enables AGC GC and Analyser systems to run in a fully unattended mode. It can also take control of GC systems and automatically perform the required analysis using the pre-programmed methods. This is coupled with the ability to send results back to a DCS or control room using fieldbus protocols or traditional 4-20 mA signalling. If On-Line operation is not required then the software runs equally well in its Stand-Alone mode with the same functionality and ease of use. Please consult with our specific brochure for this Software.

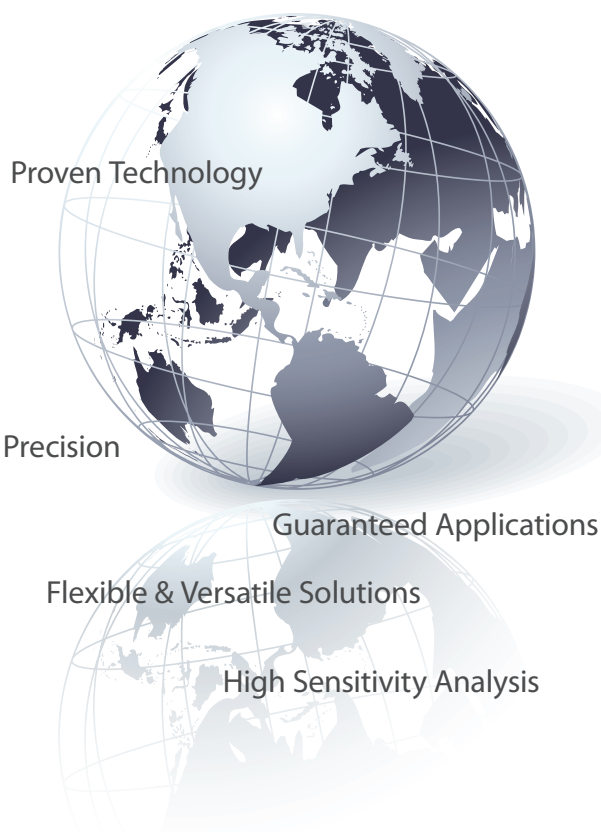


## Company Profile

### AGC Instruments Ltd.

AGC Instruments is a leading manufacturer of Gas Analysis Solutions to all users requiring a Quality Control or identification of their gas stream. We have over 50 years experience in providing our customers with their "Total Gas Analysis Solutions". We work closely with all customers to ensure they obtain the analytical solution that meets their needs and a system that is easy to use and understand. All AGC distributors are extremely experienced and factory trained to the highest standards, offering you a complete after sales support service.

The wide range of Detectors available can be customised to measure unique gas streams and we place an emphasis on the continuous development of our analytical solutions. Our worldwide reach with strategic partners ensures that you have peace of mind and after sales care that are important to your operations.



## Aftersales Care

AGC Instruments are committed to providing and maintaining quality systems from customer liaison to technical knowledge through to System Design and Delivery. We believe that our After Sales Support to the customer is one of the most important services we can offer. Each Distributor has been carefully selected and trained to ensure our customers receive the best possible service. Furthermore, online customer support and direct support are available to deliver a comprehensive support package.

For further information please contact:

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INSTRUMENTS  
Gas Chromatography since 1965

