



Leaders in Specialty Gas Solutions

CAC
GAS&INSTRUMENTATION

OIL, GAS,
PETROCHEMICAL

Leaders in providing unique solutions, the CAC GAS team has the application expertise in order to improve customer efficiency and productivity while providing the highest quality products and services.



CAC GAS PROVIDES:

- ✓ Accredited calibration gases to ensure accurate, traceable measurements for process control, environmental and laboratory applications
- ✓ Gas generators, gas mixers, gas diluters.
- ✓ Gas sample systems, sample cylinders, odorization, chemical injection systems and supplementary products.
- ✓ A wide range of high quality, gas control products for the delivery of the gas mixtures to your instrument; storage and handling equipment to maximise safety and efficiency.
- ✓ Comprehensive technical customer support to assist with any requirement you may have.

Our reference mixtures are available in multiple cylinder sizes, bottles, and ampoules all shipped directly to your location.

Comprehensive Support

Access our technical experts to help you develop effective and efficient solutions with your OHS, process, environmental and laboratory calibration gas applications.

Application Expertise

CAC GAS will develop a thorough understanding of your challenges and will provide appropriate and timely solutions for your specific application.

Reliable Products & Service

The impact of unreliable or poorly serviced products is injury or even death. CAC GAS prioritises product quality and the highest service levels in everything we do.

Natural Gas, LNG, LPG

CAC Gas provide a wide range of products and services to the Natural Gas, LNG & LPG industries for the measurement of both gas and liquid hydrocarbons, gas detection for OH&S applications and environmental monitoring requirements.

We assist our customers to reduce their risk by supplying industry leading, low uncertainty, ISO17034 / ISO17025 accredited gas standards produced by the highest quality manufacturers for the most critical measurements including fiscal metering and custody transfer applications.

- › Hydrocarbon liquid and gas certified reference materials meeting both ASTM compliance and ISO17034 accreditation are available for use in LPG and NGL production facilities.
- › Standards are packaged in ampoules, bottles, high/low-pressure cylinders, and constant pressure cylinders.
- › Several unique gas control solutions including low, internal volume, precision regulators with SilcoNert coating, heater jackets and heated lines and regulators.
- › A range of sample systems and associated equipment including Sample Systems, Sample Cylinders, Sample Probes and Probe Regulators.
- › A full range of odorization systems are available for odorant spiking of natural gas pipelines for domestic consumption.

CAC Gas currently offer multiple services to the natural gas and LNG industries including the facilitation of Effectech's Proficiency Testing Scheme for Natural Gas and LNG (GGLNG), the Stack Emissions Proficiency Testing Scheme (SEPTS) , ISO10723 Performance Evaluations of Analytical Equipment and ISO17020 Inspection of Gas quality Measurement Systems.



Oil Refining & Petrochemical

CAC Gas provide a wide range of products and services to the Oil Refining and Petrochemical industries for the measurement of both liquid and gas hydrocarbons, gas detection for OH&S and environmental monitoring requirements.

- › ASTM compliant and ISO17034 accredited certified reference materials.
- › Liquid standards are available in ampoules and bottles.
- › Gas standards are available in both high-pressure and low-pressure cylinders.
- › Light liquid hydrocarbons are available in both constant pressure cylinders and high-pressure cylinders with dual port, dip tube valves.

CAC Gas also have a range of sample systems and associated equipment available including Sample Systems, Sample cylinders, Sample Probes and Probe Regulators.



Certified Reference Materials

CAC Gas offers a wide range of certified reference materials including specialty gas mixtures, liquids, and liquefied gas standards.



Curated from several industry leading manufacturers, only mixtures that meet CAC's high standard for quality are supplied to meet the needs of an ever-evolving landscape of analytical applications.

CAC GAS's range of gases and liquids are available in a wide array of cylinders, bottles and ampoules.

All certified reference materials supplied by CAC Gas are manufactured using traceable weights and measures before being analysed or tested by specific, documented methods, and come with a certificate stating the method(s) used.

These methods exist to promote similar product quality and properties for a single product type from various manufacturers, or to ensure a minimum product quality. Methods may be nationally or internationally recognized, such as those from ASTM, ISO, or US EPA.

Traceability is demonstrated by an unbroken chain of measurements or calibrations all the way to the accepted international primary reference materials. This means the calibration of the instrumentation involved throughout the manufacturing process (scales/balances, mass flow controllers, pressure gauges, etc.) be ISO17025 certified. Calibration certificates for relative instruments are kept on file and referred to on the mixture certificate if required.

To meet the most stringent of customer requirements some mixtures will have been produced or calibrated within the scope of an ISO17034 or ISO17025 accredited organisation whose accreditation is recognised under the ILAC MRA, so they are accepted globally.

Accreditation proves the producer's technical capability in measurement, and stated traceability to SI units, having been thoroughly assessed by the relevant national testing authority.

*These mixtures meet the requirements of:

ISO/IEC17025:2017

ISO Guide 30:2015 (Clause 2.1.1 or 2.1.2)

AS2290:2018



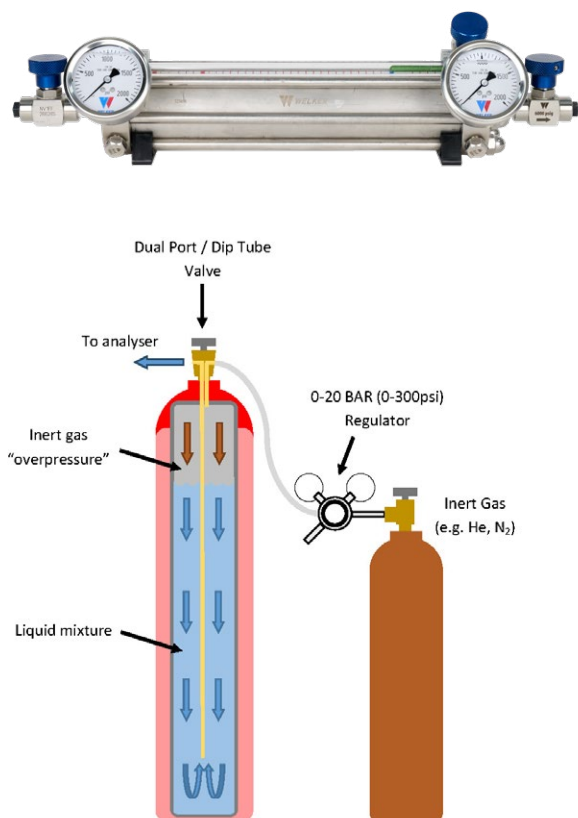
Light Liquid Hydrocarbons & Liquid Reference Materials

Light Liquid Hydrocarbons

Light liquid hydrocarbons, sometimes referred to as liquified gas mixtures, are mostly known to fit between what can easily be distinguished as crude oil product, or natural gas streams. Light liquids fit a broad spectrum of process conditions spanning from NGLs, LPGs, condensates, petrochemical and Refinery Gases.

They are available in a range cylinders including constant pressure (CPC) and standard gas cylinders fitted with dip tube valves which can ensure the composition of the standard remains homogenous by keeping it under pressure.

Light liquid hydrocarbon reference materials have the advantage of closely matching the product being analysed, while also offering increased efficiency by allowing an increased number of calibrations with the same cylinder, when compared to a gaseous mixture.



Liquid Reference Materials

CAC GAS provides a wide variety of liquid reference materials / calibration standards from DCG Partnerships. These standards are gravimetrically prepared and N.I.S.T. Traceable by weight with the gravimetric values verified by one or more analytical methods.

ASTM compliant and ISO17034 Liquid Standards in bottles and ampoules.

- Heavy Hydrocarbon Liquids
- Crude Oil
- Liquid Phase Natural Gas Liquids (NGL)

Available in 1 mL, 2 mL, 5 mL, 10 mL, 20 mL, 50 mL, 100 mL, 200 mL, 500 mL, and 1 liter sizes.



Calibration Gas for Gas Detection

CAC GAS provides calibration and bump test solutions to help ensure safety of workers through the accuracy of your personal, hand-held, vehicle mounted, or fixed gas detection instruments. Whether you require a single, disposable cylinder or a complete gas distribution system connecting multiple gas mixtures to hundreds of docking stations, CAC GAS has the solution.

As a speciality gas manufacturer, we supply calibration gas, regulators, and accessories for every gas detection instrument whether they are portable or fixed. Gas mixtures are available in a variety of sizes from 34 litres to more than 7500 litres gas volume, with gas delivery equipment, to meet your requirements.

Gas mixing and dilution systems are available that can be used for multi-point or 'span' calibrations for all types of instruments, even where ISO17025 or 'NATA' calibrations are required.

Our products can be used in every application where calibration gas mixtures are required.

- › Multi-gas mixtures (4 and 5gas) including H₂S/CO/CO₂/CH₄/O₂
- › Single gas binary mixtures CO, CL₂, H₂S, HCL, HCN, NH₃, NO, NO₂, SO₂
- › ppm to % volume concentrations
- › Refrigerant calibration gas
- › Specialty mixtures for PID calibration – Isobutylene, benzene
- › Specialty mixtures for marine applications- butane/isobutane
- › Gas Mixtures in cylinders from 34 litre to 7500 litre size
- › Large volume/high pressure cylinders for calibration/bump testing
- › Gas Distribution Systems for connection to Docking Stations
- › Specialty carrying cases/systems for technicians calibrating fixed systems
- › Experience in all sensor types for specialized calibrations.



Cylinder Size Options

CAC GAS offers non-refillable (low volume) cylinders and high pressure (large volume) cylinders and low pressure cylinders. All valve types are available including AS, BS, CGA and DIN as required. Gases are supplied with a certificate of composition. Cylinders are labelled with the gas volume, pressure, our reference, date of manufacture and shelf life.

Gas Control

Precision Analyser Solution

We offer a full line of high precision gas control equipment along with our MICRO300 Precision Regulator. All items are kept in stock for fast shipment.

The MICRO300 Precision Regulator, specially configured by CAC Gas & Instrumentation for highly-sensitive applications, is designed for customers who need the most accurate calibrations.

The MICRO300 features fully supported 'sensitive' pistons and a low internal volume to reduce wasted gas and minimise reactions. The regulator is available with or without SilcoNert® 2000 coating.



Typical size regulator vs the Micro300



Quality fittings from Swagelok available from stock with SilcoNert coating.



1/8" and 1/6" OD tubing with SilcoNert® 2000 coating.



SilcoNert® coatings can be requested on all/any components.

Specialty Gas Regulators

CAC GAS supplies a complete line of flow and pressure regulators for non-refillable and high-pressure cylinders to supply specialty gas standards and calibration gases.



Our flow regulators include the Fixed Flow (FF), On Demand Flow (ODFR) and Variable Flow (VAF) regulators used for calibration and gas supply to gas analysers and gas detection instrumentation. The Tech-Master, Spec-Master and Chem-Master pressure regulators are part of a line of products including manifolds and outlet points to provide a complete gas control solution. The product line is capable of managing non corrosive and corrosive gases up to n6 purity.

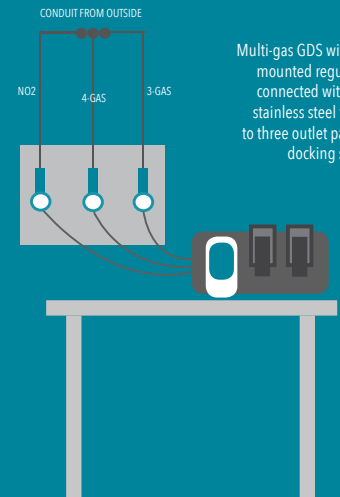
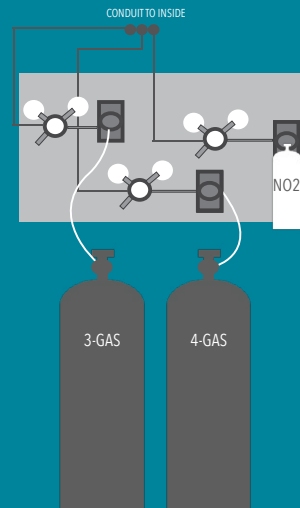
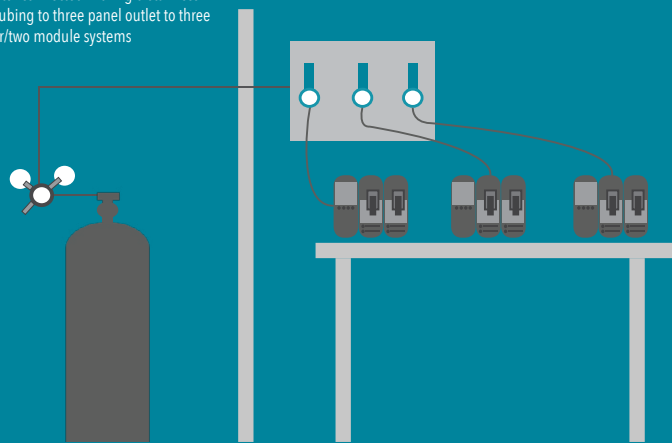
Whether gas chromatography, process gas analysers, environmental analysis, or gas detection we have the regulator systems to meet your gas handling requirements.

Gas Distribution Systems

The GDS-100 gas distribution system is designed to provide customers with a simple solution to connect high pressure (large volume) calibration gas cylinders to their docking, calibration or bump test stations. For systems where two or more test stations are required then the GDS-100 provides the complete solution as follows:

- › Customized to your needs.
- › High Pressure gas cylinders (750, 1500, 3000 or 7500 litre)
- › High Pressure Regulators (either cylinder mount or panel mount).
- › Gas Distribution Interconnecting Hoseline (from Regulator to Outlet Panels)
- › Outlet Panels (two, four, six or more outlets)
- › Demand Flow Regulators if required.
- › Connection to Docking Station or Bump Test Station (hose or tubing)
- › All Stainless Steel Construction
- › Outlet Panels can be connected together to provide total number of outlets required.

Single Gas mixture with cylinder mount regulator connected with rigid stainless steel tubing to three panel outlet to three Master/two module systems



Multi-gas GDS with wall mounted regulators, connected with rigid stainless steel tubing to three outlet panel to docking station

Cylinder Handling & Storage

A variety of gas cylinder storage and handling items are available including cylinder lifts, carrying cases & bags, disposal tools, gas cylinder enclosures, and cylinder restraints.



Gas Sampling Systems, Sample Cylinders, and Sampling Instrumentation

Gas sampling systems and equipment for **Natural Gas, LNG, Light Liquid, Crude Oil sampling.** Welker sampling cylinders, constant pressure cylinders, gas conditioning systems, and a full range of regulators, valves and probes.



Sample Cylinders, Probes, Regulators & Valves

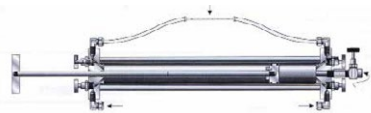
Sample Cylinders



The Welker® CP-2GM Constant Pressure Calibration Cylinder is the most effective solution for containing and maintaining calibration standards. The cylinder provides safety, reliability, and convenience to calibration standards used in laboratories world wide.



The Welker® CP-2GM Constant Pressure Sample Cylinder is recognized for its versatile abilities to safely transport a sample in original pipeline condition and provide a uniform mix using the internal Gravity Mixer™ prior to lab analysis.



The Single Cavity Sample Cylinder and the Absorbent Tube Cylinder are available for gas or liquid sampling in a variety of applications.

Probes, Regulators & Valves



CAC GAS is a
Welker Authorised Dealer



Gas Conditioning Systems



Designed to ensure a clean, representative sample is delivered to the analyser. Options are available for a range of operating conditions and natural gas compositions.

Sample conditioning systems can heat or cool a sample, remove condensate, moisture, particulates, and other impurities in addition to ensuring the sample is delivered at the right pressure to the analyser.

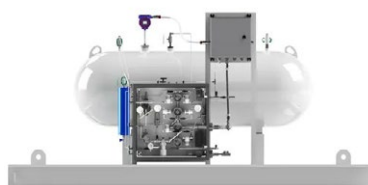
Odorization Systems



Welker Odorization Systems are industry leading for safe, accurate, and emission-free spiking of odorant into natural gas streams.

CAC GAS supplies a range of options from full turnkey solutions to small, lightweight portable systems. Systems can be offered with zero emissions technology and both pump and pumpless systems.

Spare parts and accessories are also available including probes, monitors, eliminators, and spill kits.



Hydrogen Injection Systems

Welker's Hydrogen Injection System offers a fully customisable, turnkey solution for the blending of hydrogen into natural gas pipelines.

A forward thinking strategy to meet decarbonisation goals, blending hydrogen with natural gas has been shown to significantly reduce emissions. The Welker Injection System helps you accurately achieve the desired concentration of Hydrogen in your natural gas stream.



Gas Generators, Mixers & Diluters

GasMix provides multiple solutions for creating on-site customized gas standards.

Software controlled, the GasMix line is based on mixing, diluting and injecting two to twelve gas standards. Easy to use, GasMix is a versatile tool for laboratory, environmental or industrial application.

AlyTech Aura II: Designed for laboratory use as standalone vaporizer for safe and repeatable vaporization of liquefied petroleum gas (LPG) or other liquefied gas for sampling to GC, microGC, GC/MS or elemental analyzer.

A combination of AURA II with GasMix™ Aiolos dilutor/injector is often used by petroleum laboratories for total sulfur analysis in compliance with ASTM D6667 or D7551. Saving operators time and money, this solution enables the automation of gaseous and LPG samples injection, as well as performing a multipoint calibration from a single standard.

The new AlyTech vaporizer significantly increases productivity, safety and improves your quality assurance while running LPG or other liquefied gas samples. Equipped with heating, pressure, and flow regulators it is flexible to fit optimal conditions for your application.



PEAK Gas Generators are specifically designed and engineered for GC laboratory applications, the Precision series represents the cutting-edge of Peak Scientific innovation in on-demand gas generator design. Combining convenience and reliability in a stackable, modular and compact design, Precision is the safe and practical choice for your GC instrument gas requirements.

CAC GAS provides a complete line of electrochemical gas generators designed to provide calibration gas standards for H, NO₂, CL₂, CLO₂, H₂, HCN, H₂S, NH₃ and O₃ gases. Simple to use with long life cells, these gas generators can replace gas cylinders for many applications.



Services

Proficiency Testing

The scheme operates in accordance with ISO 17043 and focuses on the natural gas and LNG industries. Up to four different gas mixtures are sent to the participating laboratories for analysis.

The scheme is run on a quarterly basis giving regular opportunity for participation. CAC GAS with our partner EffectTech provides the Global Gas and LNG (GGLNG) proficiency testing scheme.

Key features of the PT Scheme are:

- › A quantitative assessment of a laboratory's capability and performance
- › An objective means of assessing and demonstrating the accuracy of your measurements
- › An assessment of a participant's performance in relation to other laboratories



Gas Quality Measurement Systems Performance Evaluations

CAC GAS with our partners EffectTech and Synertec, provide performance evaluations on gas quality measurement systems and process gas chromatographs. The performance evaluations are in accordance with international standards ISO 10723. Highly trained and experienced staff provide fast and effective solutions to your fiscal, regulatory, contractual, safety and environmental gas measurement obligations.

Instrument performance is evaluated to:

- › Determine errors, bias and uncertainty of the measurement
- › Re-calibrate response functions (MLC's) for correcting non-linear response characteristics
- › Design the most appropriate calibration gas composition for your requirements

The objective of the performance evaluation is to assess the instruments performance against the requirements of:

- › Repeatability of measurement
- › Maximum Permissible Errors (MPE)
- › Maximum Permissible Bias (MPB)

What are the benefits of a quantitative performance evaluation?

- › To improve your fiscal gas quality metering
- › To validate your analytical system
- › To reduce financial exposure from mismeasurement



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