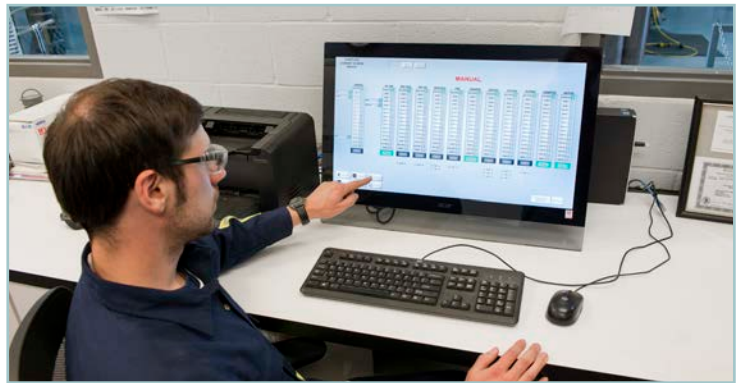


**Precision**

SPECIALTY GAS PRODUCTS

A Weldcoa/AsteRisk Partnership

**Product Catalog**



phone (630) 806-2000 • [www.precisiongasproducts.com](http://www.precisiongasproducts.com)

*Weldcoa*

# TABLE OF CONTENTS

## Prep

High Integrity Prep System	pg. 3
Bake Out Ovens	pg. 4-5

## Fill

Manual Fill Systems	pg. 6-7
Automatic Fill Systems	pg. 8-9

## Post Fill

Inverters/Mixers	pg. 10
------------------	--------

## Purify

Helium Carrier Gas Purifier	pg. 11
Helium Purifier	pg. 12

## Analyze

Packaged Analytical Labs	pg. 13
Analytical Lab Automation	pg. 14-15

## Specialty Gas Training

Precision University [www.precisiongasproducts.com/train/](http://www.precisiongasproducts.com/train/)

## THE INDUSTRY LEADER IN AUTOMATED SPECIALTY GAS FILLING

Precision Specialty Gas Products, a subsidiary of Weldcoa, is a one stop shop for the highest quality equipment and services for the production of specialty gases, allowing distributors to implement, upgrade, or add new capabilities. Precision can help you prepare a budget, design a facility, manufacture the equipment, install the fill systems, train your people and support your business long term with proper documentation and validation of your equipment. We are proud to say all of our specialty gas equipment is engineered, designed, programmed, fabricated, wired, assembled and thoroughly tested at our Aurora, Illinois USA facility.



Consult Design Build Install Train Support



# PREP EQUIPMENT

**Precision**

SPECIALTY GAS PRODUCTS

A Weldcoa/AsteRisk Partnership

## HIGH INTEGRITY PREP SYSTEM

The Vent and Evacuation System is used to prepare the cylinders for processing prior to going to the blend cell. Includes a control panel, linear manifold and vacuum pump system. It is delivered assembled and ready to go. Simply uncrate the unit, position it in place, anchor it to the floor and connected it to the existing plumbing.

### TYPES AVAILABLE

- Oxidizer/Inert Gases (low concentrations of O<sub>2</sub> below 23.5%)
- Inert Gases
- Flammable/ Inert Gases

### FEATURES AND BENEFITS

Our system is high integrity, with all welded construction and VCR or VCO connection points. This allows a lower ultimate vacuum to be reached which would result in high purity straight gas or more stable reactive gas mixture

- Efficiently preps cylinders for blending
- Leads flexible metal hoses with VCR fitting welded fittings
- Durable, powder coated frame
- Valves are provided for vent, purge and vacuum and static vacuum
- Each unit is shipped assembled, oxygen cleaned and pressure tested



# PREP EQUIPMENT

## AUTOMATED BAKE OUT OVEN

The Precision Bake Out Oven provides an efficient means to prepping cylinders for industrial, medical and specialty gas mixtures and/or pure gas grades of 99.999% purity levels or better by removing moisture and any trace contaminants from cylinders being put into service. The system uses a cycle of heat, vacuum and purge gas to remove the contaminants.

### FEATURES AND BENEFITS

- **Can have purge pressures up to 200 PSI drastically improving the efficiency and reducing the time required in the cylinder preparation process.**
- Convenient double door design provides quick and easy access for loading/unloading cylinders with no ramps to roll cylinders up or down on.
- 1" stainless steel pipe header, all welded, eliminating the potential for leak points.
- Provided with flexible post-sintered Teflon lined leads
- Operator interface screen with PLC for full automatic control of entire bake out process.
- Automatic valves are provided for vacuum pump isolation, purge gas and vent
- Each unit is shipped fully assembled and pre-tested



### HIGH QUALITY PRODUCT MADE IN-HOUSE

We offer a standard automated 12-cylinder unit designed specifically for non-flammable gases, available in either 240 Volt or 480 Volt. Other voltage options are available upon special request. We also offer the option of providing up to three purge gases. This allows the customer to pipe argon, helium, and nitrogen to the oven and use the same purge gas that the cylinder will be put into service.

### PLC CONTROLLED WITH SAFETY IN MIND

A custom PLC monitors the vacuum pressure, cylinder wall temperature, oven temperature, and purge pressure. The unit also provides multiple safety parameters and alarms for situations such as if the vacuum is taking too long, overheating, no purge gas is available, etc. A vacuum pump motor starter and thermal over load are included to simplify connecting the vacuum pump of your choice. Note: vacuum pump is not included with standard unit but is available, with or without a stand.

### THOROUGHLY TESTED

The entire manifold assembly, including the leads, is manufactured at Weldcoa, as well as 100% hydrostatically pressure tested to 1.5 times the MAWP, 100% nitrogen leak tested, 100% oxygen cleaned, dried, bagged to the highest safety standards.





## HIGH INTEGRITY BAKE OUT OVEN

The Precision High Integrity Bake Out Oven represents the highest level of automated process for the vacuuming of cylinders under intense heat. The automation walks you through the step by step process of choosing how long to vacuum, at which level of vacuum and at what temperature. A variety of gases can be programmed to purge the cylinders at different intervals, of your choosing. The result is a higher level of achieved purity, within the cylinders, with the least amount of labor and within the most efficient amount of required time.



### FEATURES AND BENEFITS

- Access doors for loading/unloading cylinders are provided on each side of the unit with no ramps to roll up and down
- Comes standard in an automated 6 or 12 cylinder unit model.
- We also offer the option of adding up to three purge gas valves allowing the ability to pipe argon, helium, and nitrogen and use the same purge gas that the cylinder will use for service.
- The cylinder manifold is manufactured, at Weldcoa, out of all welded 2" stainless steel tube header and is available with flexible metal stainless steel pigtail hoses for cylinder connections using high integrity face seal fittings.
- A vacuum pump is provided with the vacuum piping.
- Transducers monitor the vacuum, cylinder wall temperature, oven temperature, and purge pressure.
- The unit will also sound alarms if the vacuum is taking too long, overheating, or has no purge gas available.

### Two PLC controlled modes of operation provided:

**Automatic Operation** in which the oven automatically proceeds to the next step of operation without operator input once a pre-determined operating parameter has been achieved.

**Manual Operation** in which the operation is still controlled by the touchscreen, however the system will only perform a function specified by the operator and will not proceed to a next step without input. This mode is particularly useful to Pre-Bake cylinders.

# FILL EQUIPMENT

## MANUAL SPECIALTY GAS GRAVIMETRIC FILL SYSTEM

Our Manual Gravimetric Fill Systems for specialty gas have the technical options to be customized to meet your specialty gas filling needs. This manual system is designed to produce mixtures (from up to 17 source gases) from percent down to ppb concentrations. Each unit is pre-engineered and tested before it is delivered and installation is quick and easy.

### TYPES AVAILABLE

- **Oxidizer/inert gases**
- **Inert (with limited Oxygen 500 psi or less)**
- **Flammable/inert gases**
  - Flammable gases as defined by CFR-49. Gases that pose a hazard of ignition when combined with an oxidizer
- **Reactive/corrosive and inert gases**
  - For gases that may react due to other components due to their acidity or alkalinity

### BLEND PANEL TYPES AVAILABLE

- **For gases filled by high pressure pumps**
  - Requires master shut off valves
  - 1/2" brass pipe or 1/2" stainless steel tube header
  - Swing arm with CPV type connections
- **For gases filled from gas storage (banks or single cylinders)**
  - Uses diaphragm packless valves
  - 1/4" stainless steel or monel tube header
  - VCR connections for most mechanical joints (Oxidizer will have brass compression fittings)

**WARNING:** The PSGP Manual Gravimetric Fill Systems are not intended or designed for blending flammable and oxidizer gases together. These gases MUST be kept separate from any one Manual Gravimetric Fill System otherwise there is a potential for a flash or explosion. The concern is having residual hydrocarbons on valve seats and then having high-pressure oxygen passing through those valves.



### COMPONENTS IN EVERY SYSTEM

- Powder-coated, custom cabinet
- Blend panel with swing arm for up to 9 supply gases
- 6 or 12 cylinder orbital manifold with pigtailed
- Sartorius high accuracy scale
- Digital pressure gauge for high pressure and a compound vacuum gauge
- Pirani vacuum gauge for micron readings
- Typical interconnection piping is orbitally welded with VCR end connections

### Additional Options

- Source gas cylinder storage rack
- Micro-cylinder for producing ppm components
- Swing arm for premix cylinders for making diluted mixtures

## SAFETY FEATURES

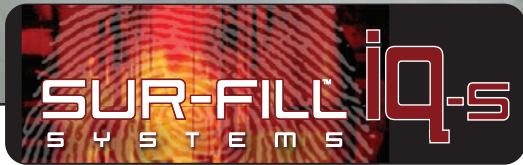
- All components are orbital welded and mostly VCR connections (Oxidizer/Inert model has monel tubing with compression fittings)
- Valves are high integrity diaphragm packless type (Oxygen is mechanically sealed Monel/brass)
- The GasFlow manual valves and check valves have been cleaned by GasFlow per: CGA G4.1-2009, practice for cleaning methods and cleanliness levels for material and equipment used in oxygen-enriched environments
- All piping components manufactured by Precision Specialty Gas Products (PSGP) have been cleaned for oxygen service per: PSGP oxygen cleaning procedure # PSMB-02 CLEAN
- Relief valves are installed for over pressure protection during the fill process.

## FEATURES AND BENEFITS

- Designed to produce mixtures with components from percent down to ppb concentrations from multiple source gases
- All process piping has been hydrostatically tested to 5250 PSIG
- Installation is quick and easy
- Self-contained cabinet aids in reducing environmental influences to scale
- Orbital fill head provides equal flow to each cylinder connected to the manifold
- A digital vacuum compound gauge, digital high pressure gauge and digital micron meter are all included
- Entire unit is fully assembled, pre-engineered, oxygen cleaned and pressure tested before it is delivered. This is to check the entire system, making sure there are no leaks in the common piping.



# FILL EQUIPMENT



## AUTOMATED SPECIALTY GAS FILL SYSTEM

The Sur-Fill iQ-s Automatic Specialty Gas Gravimetric Fill System puts automated technology at your fingertips. This easy to use system has touch screen technology that guides you through the specialty gas filling process, providing greater productivity and accuracy. All four models (Inert, Oxidizer, Flammable, Reactive) include an isolation cabinet, scale, orbital manifold, and touch screen technology. Installation, start-up and training for each system is quick and easy.

**Sur-Fill iQ-s is capable of producing mixtures (from up to 10 source gases) from percent down to ppb concentrations, and up to and including EPA Protocol gases. Our Sur-Fill iQ-s system is integrated with AsteRisk's Specialty Gas Manager software program.**





## FEATURES AND BENEFITS

- Unlimited number of recipes can be stored with up to 10 source gas supply stations
- Intuitive HMI touch screen with self prompting features
- Produces ultra-consistent mixtures
- Is less dependent on operators' actions for highly reliable mixtures
- Uses significantly less labor to produce highly accurate mixtures
- Runs unattended after the cylinders are connected and the mixture recipe is selected
- Features remote monitoring capability and support
- Includes a start up and power loss recovery validation mode
- Performs pigtail deflection test prior to producing each mixture
- Software keeps track of pressure and service cylinder contents
- Integrated with AsteRisk's Specialty Gas Manager software program:
  - Generates recipes for complex mixtures (% , PPM, PPB)
  - Automatically transfers to filling system software including pre-fill and post fill (vacuum, purge) procedures
  - Produces DOT, FDA, OSHA AND CGA compliant cylinder labels
  - Performs post fill component calculations (actual)
  - Produces Certificates of Analysis
- Each unit is shipped fully assembled and comes thoroughly pre-tested

## SAFETY FEATURES

- All process piping has been hydrostatically tested to 5250 PSIG
- All components are orbital welded and mostly VCR connections (Oxidizer/Inert model has monel tubing with compression fittings)
- Valves are diaphragm type pneumatically actuated stainless steel (Oxygen is diaphragm packless monel/brass)
- The GasFlow pneumatic valves and check valves have been cleaned by GasFlow per: CGA G4.1-2009, practice for cleaning methods and cleanliness levels for material and equipment used in oxygen-enriched environments
- All piping components manufactured by Precision Specialty Gas Products (PSGP) have been cleaned for oxygen service per: PSGP oxygen cleaning procedure # PSMB-O2 CLEAN. This is to check the entire system, making sure there are no leaks in the common piping.
- Every morning, when logged into, the system performs an integrity check prior to starting the unit
- Relief valves are installed for over pressure protection fill process.



# POST FILL EQUIPMENT

## CYLINDER INVERTER / MIXER



### An accepted method ready for change

In the industrial and specialty gas industry, the accepted method for ensuring a homogeneous mixture with mixed gas cylinders is to place them on a mechanical roller in the upright position and rotate them into a horizontal position. The cylinder is then agitated with a spinning action that is reversed periodically during the mixing process.

While this method has been effective for achieving a homogeneous mixture in a relatively short period of time (approximately 15 minutes) it has led to several problems, including deterioration in the appearance of the cylinder and additional costs associated with painting and replacement of damaged labels. Cylinders must also be taken out of service for this process, decreasing available inventory. Cylinder rolling is also an issue with aluminum cylinders (used in specialty applications) because appearance and contamination are a significant risk.

### A solution for the industry inverter issues

Our six-cylinder platform system allows cylinders to be repeatedly inverted while holding them in a fixed position. The cylinder is placed in an upright position and rests on a hard plastic pad in a V shaped holder with a padded adjustable stop that rests against the cylinder cap. This prevents the cylinder from sliding in the holder when it's being inverted. An air piston is used to invert the cylinder preventing it from being marked by the typical roller bands and eliminating the tearing or marring of the label.

**Our cylinder inverter won't mar your cylinders like traditional rollers. The cylinder labels stay intact, maintaining quality and safety.**



### FEATURES AND BENEFITS

- Used for mixing gas mixtures after filling to ensure a homogeneous mixture for the industrial and specialty gas industry
- 3 or 6 cylinders models available
- Pneumatically controlled model available for rated areas
- Ramp creates an easier loading and unloading condition
- Each unit is shipped fully assembled and comes pre-tested

# PURIFYING EQUIPMENT

**Precision**

SPECIALTY GAS PRODUCTS

A Weldcoa/AsteRisk Partnership

## CRYO TRAP GAS PURIFIER

### Improve your GC Performance with our helium carrier gas purifier

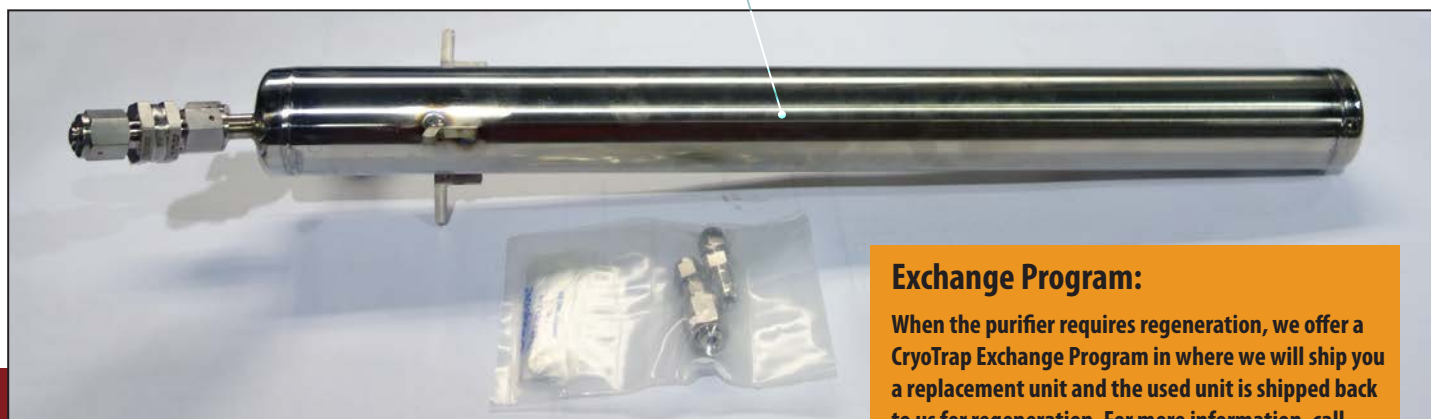
Our cryo traps purify the helium carrier gas being supplied to a Gas Chromatograph (GC) significantly improving the GC performance especially for PPM or PPB analysis. The Precision Specialty Gas cryo trap purifier uses an activated carbon or molecular sieve bed immersed in a liquid nitrogen bath. It will remove impurities by freezing and plating out contaminants on the bed material. The helium will not freeze out and continue to flow to the gas chromatograph providing better analysis.

### FEATURES AND BENEFITS

- The gas purifier uses low temperature deposition of impurities in Helium to trap out gases such as Nitrogen, Oxygen, Argon, and CO<sub>2</sub> and also trap out moisture and hydrocarbons.
- This is a simple, low cost, highly effective way to increase the purity level of the helium carrier gas.
- Will purify helium to a very low PPB level of contaminants providing a good background gas as close to zero as possible for better analysis results.
- The purifier bed material can be regenerated to allow years of use without media replacement.
- Each unit is shipped fully assembled and comes pre-tested

### AVAILABLE OPTIONS

- Activated Carbon or Molecular Sieve (Mol Sieve) bed material
- Connections for the inlet and outlet of the helium carrier gas and for media replacement.
- The unit is made to rest in the mouth opening of a liquid nitrogen dewar container. A 30 liter liquid nitrogen dewar is optional.



### Exchange Program:

When the purifier requires regeneration, we offer a CryoTrap Exchange Program in where we will ship you a replacement unit and the used unit is shipped back to us for regeneration. For more information, call 1.630.806.2000.

# PURIFYING EQUIPMENT

## HELIUM GAS PURIFIER SYSTEM

**Makes it easy and economical to purify industrial grade helium (4.8) into grade 5.0, 6.0 or even better and compress it into cylinders right at your facility.**

The Weldcoa Helium Gas Purifier System is designed specifically to purify Helium. It uses an activated carbon bed immersed in a liquid nitrogen bath. It will remove the following impurities by freezing or liquefying: water, Carbon Dioxide, Oxygen, Argon and hydrocarbons. It will impede the flow of Nitrogen significantly to produce a very clean outlet stream of the source gas. The purifier must be periodically regenerated to remove the impurities trapped within it.



### FEATURES AND BENEFITS

- Skid mounted, turnkey solution is easy to set-up and start producing
- Produce 5.0, 6.0, or possibly 7.0 grade helium from your current source of product. The ultimate purity achievable is dependent on the level of contamination in the source gas and the flow rate through the purifier.
- Unit includes regeneration system, allowing for repeated use of purifier traps
- All process piping is orbitally welded where possible utilizing VCR connections
- Dual Swing Arm is provided to switch between purification mode and regeneration mode and ensure no cross contamination between helium and nitrogen.
- It is not necessary to place the purifier unit in a permanent location. The purifier will operate without electricity or nitrogen gas. The unit may be placed in proximity to cylinder filling operations and moved for regeneration.
- Each unit is shipped fully assembled and comes pre-tested

### AVAILABLE ADD-ON FEATURES

- **A 12 cylinder header integrated into the system.**
  - Allows cylinders to be filled right on the unit and prevent any other leak points when directing the gas to an existing manifold.
  - At the end of the header, there will be an additional (2) ½" diaphragm packless valves for venting the header and pulling the vacuum.
  - The vacuum system is not included but can be sold separately.
  - Leads on the Header are rigid ¼" leads with VCR by CGA 580
- **Cylinder Securement Rack**
  - For 12 cylinders

# ANALYZING EQUIPMENT

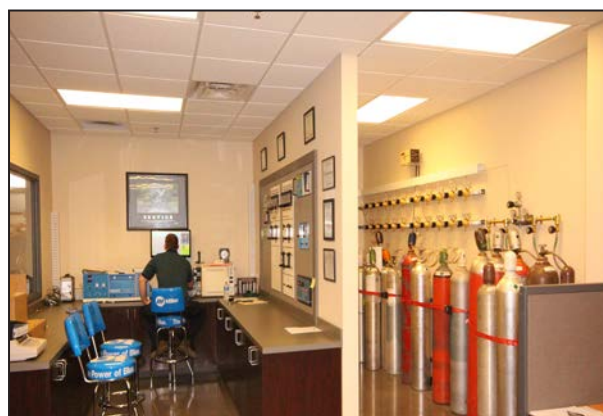
**Precision**

SPECIALTY GAS PRODUCTS

A Weldcoa/AsteRisk Partnership

## PACKAGED LAB SAMPLING SYSTEMS

Make the sampling process operator friendly with one of our packaged labs. Each one is designed, manufactured, oxygen cleaned and pressure tested at PSPG before we ship them out.



### FEATURES AND BENEFITS

- Closed piped system eliminates most make and break connections, reducing the possibility of contaminants in the system.
- Each instrument has its own control panel for selecting purge, sample, or calibration gases.
- Makes the sampling process more operator friendly
- System designed to keep the instruments ready for use with constant purge when not in use.
- Piping layout allows selection from one sample source to another to be performed within a matter of seconds.
- Allows for sample to simultaneously go to more than one instrument at a time.

Note: Does not have data recording capabilities

### THREE LAYOUT OPTIONS AVAILABLE

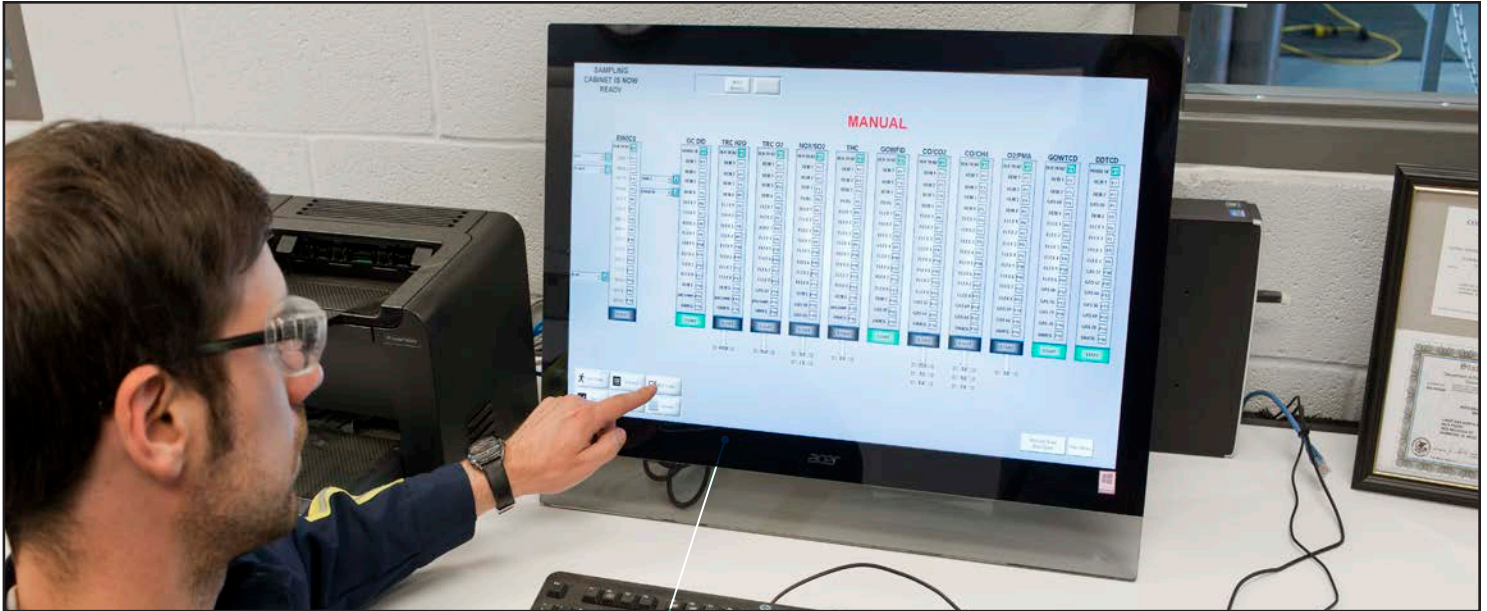
- **Analytical Wall-Mounted System for Lab Room Environments**
  - Easy access to instruments
  - A more economical option than the cabinet models
  - A wall-mounted lab can help you showcase a professional look to your customers
  - Organized
  - Allows room for expansion
- **Analytical Cabinet for Plant Floor Environments**
  - Specially equipped with fans, filters and vents to keep the instruments clean and cool
  - A compact, sealed enclosure
  - Ideal for a facility that has limited space and/or currently doesn't have a designated lab area
- **Analytical Cabinet for Lab Room Environments**
  - For a climate controlled designated lab area
  - Compact, space saving design

### AVAILABLE ADD-ON FEATURES

- **Samples Racks or Regulator Stations**
  - Sample racks can be either single or double sided
  - Regulator Stations for samples, calibration and support gases
  - Designed, built, oxygen cleaned and pressure tested at Weldcoa before shipment
- **Push Button Add On Feature**
  - For each gas analysis, the Operator will have the ability to manually select the zero, the span and then select the sample source for each instrument via push button interface.
  - This function allows the operator to electrically switch a sample source with a push of a button instead of physically disconnecting and reconnecting the line to the desired sample port.
  - The push button feature is what triggers the 16 port Valco selector valve to connect the chosen source to sample source 1 or 2
  - This is a higher integrity system due to 16 port Valco selector valve feature

# ANALYZING EQUIPMENT

## P.A.S.S. (PROGRAMMABLE AUTOMATED SAMPLING SYSTEM)



### A CUSTOMIZED SYSTEM THAT PERFORMS

Provide a new level of automation for specialty gas production with the P.A.S.S., our revolutionary system that automatically samples and records a number of analyses simultaneously and with certainty. The P.A.S.S. system will automate the analysis with any instrument that has an output signal that includes a reporting system. It will also initiate the sampling process to any gas chromatograph.

A uniform, consistent result with unattended, conducted analyses can be achieved with a P.A.S.S. system in your facility. One of the game-changing benefits includes the ability to perform analysis during off work hours. This feature, along with many other benefits, will help relieve bottlenecks for certain operations where the analysis is holding up the shipment of cylinders. The overall results will significantly reduce labor costs per analysis.

### PROPRIETARY PROGRAMMING THAT DELIVERS

The P.A.S.S. manager software gives the user the ability to program analysis profiles, calibrate the instruments, perform sampling on multiple instruments simultaneously and create printed reports. The system is controlled by a PLC using proprietary programming by Precision Specialty Gas Products. An HMI touchscreen is provided for operator interface with the system and gives operators the ability to choose between Auto and Manual mode.

Note: The PASS manager software does not monitor or record data from any gas chromatograph; it only initiates the sample/calibration supply gas to the unit. Existing software packages such as ChromPerfect would still be used to operate and record the data

**The entire system and programming is customized to fit your specific analytical requirements.**

#### Included with the system:

- Custom, sealed cabinet that houses the major components that make up the system
- 16 port valve for each instrument that has a special flow-through rotor, custom designed specifically for Weldcoa.
- An HMI touchscreen and keyboard
- Remote monitoring and support
- Custom PLC and P.A.S.S. Manager Software

## FEATURES & BENEFITS

- Provide uniform, consistent analysis
- Reduce lab analysis labor costs
- Perform simultaneous analysis
- Capture and record analytical data
- The software has the ability to zero and span instruments with user inputted zero and standard gases that are ultimately stored into the system
- Includes the ability to enter test specifications with pass/fail criteria
- The scheduler feature allows the user to edit serial numbers for the different sample locations, schedule multiple profiles to run and add lot numbers unique to the scheduled profiles



## BUILT IN SAFETY FEATURES

The P.A.S.S. cabinet has been designed with a nitrogen purge system to prevent possible hazardous atmospheres from occurring inside the cabinet during operation. If any of the safety criteria is not met, the PLC recognizes the system is at fault and will cut the power in six seconds. During these 6 seconds, a set of security actions will occur, sending all mechanical components to their designated home positions.

Our cabinets mechanical and electrical development, wiring and installation are assembled at Weldcoa's UL Certified, Aurora, Illinois facility. Weldcoa is also an Authorized System Integrator for Mitsubishi Electric.

Individual gas lines can run in a series to multiple valco valves allowing one or multiple instruments to use that same gas flow simultaneously. This functionality saves a significant amount of time and labor.

## THE CABINET: AN INERT ENVIRONMENT AT ALL TIMES

The P.A.S.S. cabinet is a sealed enclosure that houses the major components that make up the system. This enclosure is independent from the PLC and HMI touchscreen. The enclosure is supplied with 24-volt low voltage power. The enclosure is set for nitrogen purge to keep an inert environment at all times. The P.A.S.S. cabinet also has two vent lines; one is for the purge relief and one is for the sample gases downstream of the many valves.

Inside the cabinet, each instrument has a valco selector valve that allows the user to select the sample source to be sent to the different instruments of the system. Each valve has a special flow-through rotor. The rotor allows gas to flow-through from the inlet ports to the outlet ports when a specific gas port is required to run to an instrument(s).

Individual gas lines can run in a series to multiple valco valves allowing one or multiple instruments to use that same gas flow simultaneously. This functionality saves a significant amount of time and labor.



## WELDCOA - CONSTANT INNOVATION

---

### *INQUIRE ABOUT OUR OTHER PRODUCTS:*

- √ Pallets
- √ Gas Packs (Cradles)
- √ Storage Cages
- √ Pigtails / Leads and Manifolds
- √ Medical Oxygen Storage and Transportation Carts
- √ Palletized Truck Bodies & Trailers
- √ Industrial & Specialty Gas Fill Systems
- √ Industrial & Specialty Gas Automation
- √ Cryo Pump Protection and Automation
- √ Cryo Pump Install and Repair
- √ Welding B-Booms

---

#### WELDING COMPANY OF AMERICA

Weldcoa | 335 East Sullivan Road | Aurora, Illinois 60505  
[www.weldcoa.com](http://www.weldcoa.com)

Phone: 630-806-2000 • Fax: 630-806-2001