

Laboratory Hardware

Custom Gas Chromatography Solutions



Custom solutions for your analytical needs.



WASSON - ECE
INSTRUMENTATION

Laboratory Hardware

Wasson-ECE Instrumentation offers hardware-only solutions for advanced chromatography and proprietary technology.

Wasson-ECE Instrumentation, the leader in custom configured analyzers, offers hardware-only solutions for customers with chromatography experience who would prefer to develop their own analysis methodology. We offer flexible equipment design to ensure that our systems will work with your proprietary methodologies.

Customers ordering a hardware-only configuration create guidelines for hardware design, select columns, and set operation parameters for the instrument. Wasson-ECE will then configure the hardware to customer specifications, submitting all hardware designs to the customer for final approval.

We're committed to giving you the solution you need, so Wasson-ECE provides a limited one warranty on the installed hardware. Our application chemists are also available for consultation to help you optimize your design on a fee-for-service basis.



Wasson-ECE offers the following specialty GC hardware systems:

Gas AutoSampler

Pressurized Liquid AutoSampler

Vapor Phase Injection System

Variable Pressure Sample System

Dynamic Blender

AutoSamplers

Save time and increase accuracy by adding autosamplers to your laboratory gas chromatograph. Wasson-ECE instrumentation offers two types of autosamplers: the [Gas AutoSampler](#) for heating and injecting pressurized gas phase samples, and the [Pressurized Liquid AutoSampler](#) for injecting pressurized liquid samples at ambient temperatures.

Gas AutoSampler

The Wasson-ECE Gas AutoSampler automates delivery of pressurized gas samples to a GC at atmospheric pressure. The Gas AutoSampler includes an oven and heated transfer system that can send samples to the GC at temperatures of up to 150°C.

Automated Injection

Samples to be analyzed are placed in the gas autosampler oven, which can hold twelve 500-cc sample cylinders or nine 1-liter cylinders. Technicians then enter sample information into the chromatography system computer, which also allows them to select the time interval between sample injection, set the temperature of the oven, log the sample injection times, and create data reports.



Sample Protection

The Gas AutoSampler is a stand-alone instrument that sends samples to the GC through a heated bridge, ensuring that samples are injected at oven temperature. This heated pathway is purged with carrier gas between each sample injection, and a vacuum pump ensures an extremely low level of cross-contamination (typically less than 50 ppm).

Gas AutoSampler (cont.)



Pressure Regulation

Samples at pressures up to 1200 psi are automatically regulated during the purging sequence so the GC injects all samples and calibration blends at atmospheric pressure. The Gas AutoSampler can also be configured to automate injection of samples that are already at atmospheric pressure.

Accuracy and Precision

Automating the sample injection process increases efficiency and prevents technicians from having to perform time-consuming, repetitive tasks. The Gas AutoSampler ensures that sample analysis is not only faster, but also more precise, accurate, and consistent.

Compare the GC analysis results for the following 2ml samples of n-pentane and n-hexane at 100 psi in propane. In the first run, the sample is sent to the GC from the AutoSampler at ambient temperature; in the second run the AutoSampler heats the samples to 130°C before injection.

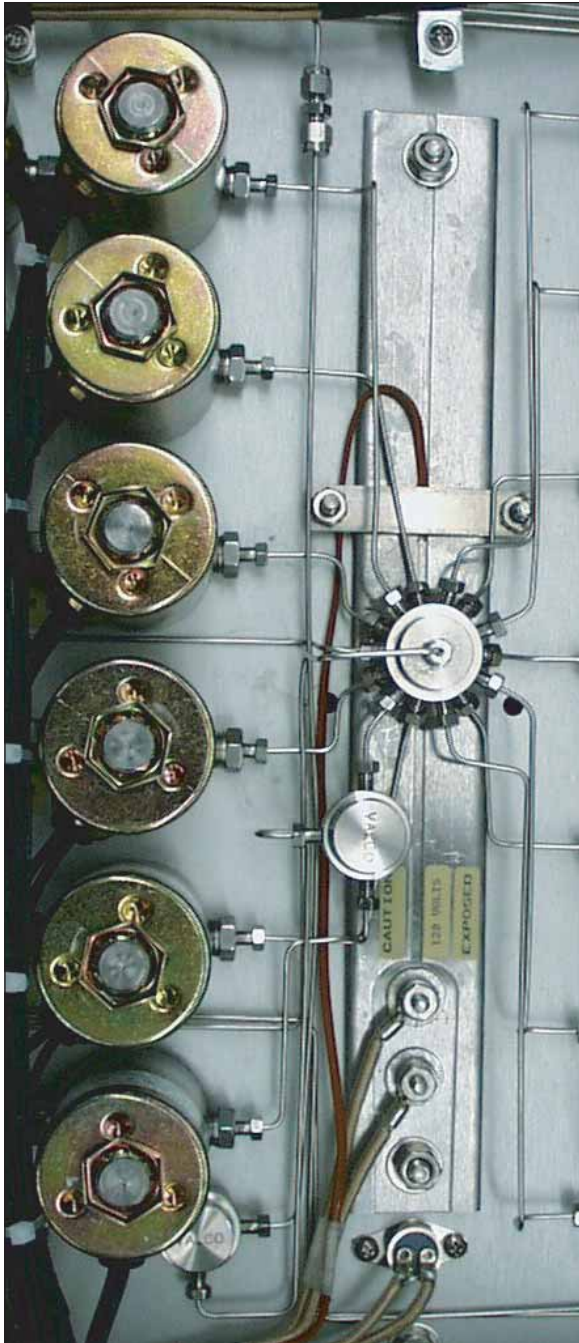
Table 1: Increase in Detector Accuracy and Precision with Heated Gas AutoSampler

Component	Unheated Sample		Sample at 130 C		Percent change in area	Percent change in rel. std. dev.
	Avg. Peak Area	% Rel. Standard Deviation	Avg. Peak Area	% Rel. Standard Deviation		
Propane	867938	0.22 %	849415	0.23 %	- 2.1 %	+ 0.01 %
n-Pentane	24025	10.2 %	41282	1.35 %	+ 72.0 %	- 8.85 %
n-Hexane	16475	16.7 %	56087	0.80 %	+ 240.0 %	-15.9 %

The Gas AutoSampler showed a **240%** increase in sensitivity to n-hexane and a **72%** increase in sensitivity to n-pentane in the gas sample when heated. Make sure you're getting the range and sensitivity you need by adding the Gas AutoSampler heated sample system to your gas chromatograph!

Pressurized Liquid AutoSampler

Wasson-ECE offers laboratory automation for pressurized liquid samples such as [liquefied petroleum gas \(LPG\)](#) and [natural gas liquids \(NGL\)](#). Liquid samples at pressures up to 1200 psi are stored in sample cylinders. The Pressurized Liquid AutoSampler uses inert gases to maintain pressure so that the sample remains in the liquid state at ambient temperature as it passes to the gas chromatograph for analysis.



Pressurized Liquid AutoSampler Features

Purges automatically with carrier gas between each sample run

Remote-starts the GC and the data recording software such as ChemStation™

Adds a date/time stamp to all samples

Holds up to nine 3.5 inch-diameter sample cylinders

Works with standard open or floating-piston sample cylinders

Pauses automatically when it detects that the GC is not running or not ready

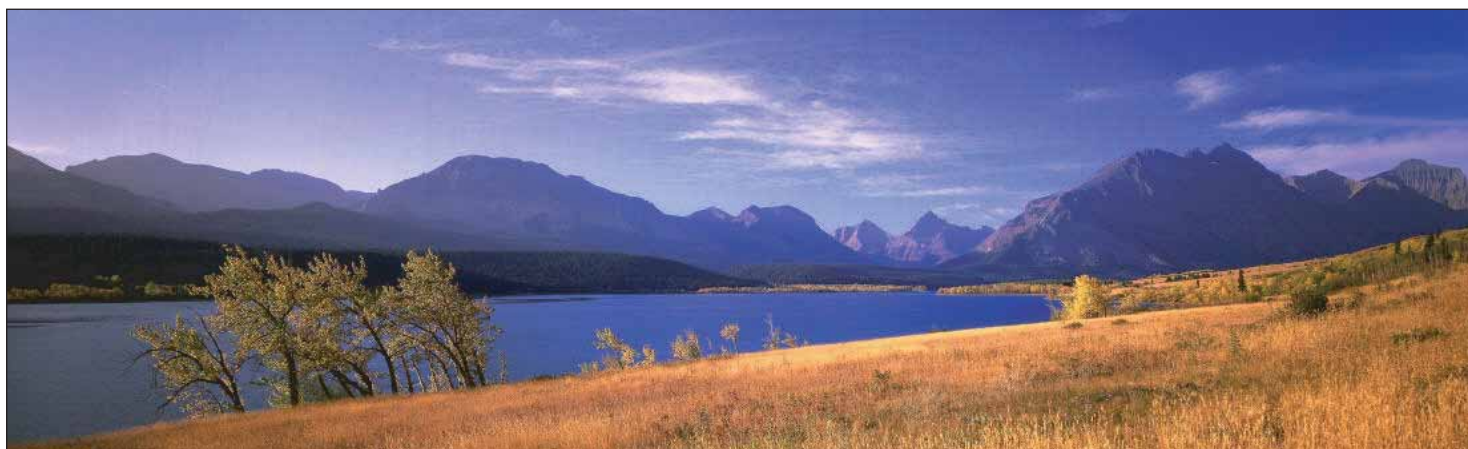
Can interrupt the scheduled sample sequence to process a priority sample

Pressurized Liquid AutoSampler (cont.)



Quick Connect

When samples enter the laboratory, they are placed in the Pressurized Liquid AutoSampler, which will transfer pressurized samples to the gas chromatograph. Sample cylinders with 1/4 inch tube fittings, VCO, or "Quick Connect" fittings can be inserted directly into the top plate of the sampler. These fittings will hold the sample cylinders vertically, ensuring that samples are drawn from the bottom of the cylinder. Sample cylinders with smaller tube fittings can be held vertically with an optional cylinder rack.



Variable Pressure Sample System

The **Variable Pressure Sample (VPS)** system gives you two ways to ensure the precision and accuracy of your gas chromatography results. The first method is **pressure correction**, used to create uniform pressure among all injected samples and the calibration blend. The second method is **multipoint calibration**, which you can use to test the pressure ranges that will deliver accurate results from your calibration blend.



Pressure Correction

The **VPS** pressure-correction system is a multistep process that ensures samples and calibration blends are at uniform pressures when they are injected. First, when the calibration blend is run through the GC, the VPS measures and stores the pressure of the calibration blend at the time of injection. Then, as each sample is injected at the stored pressure, the VPS adjusts the pressure of the sample to match the pressure of the calibration blend. The inject pressure of the sample is reported to Agilent Technologies ChemStation software so calculations and quality control operations can be performed.

Multipoint Calibration

Using the VPS, you can run calibration samples at various pressures from a single standard. This decreases overall lab costs while ensuring greater accuracy in results.

The multipoint calibration function allows you to test for signal linearity at different pressures. With this feature, you can easily pinpoint the range of pressures where you will receive accurate and meaningful results from your calibration standard.

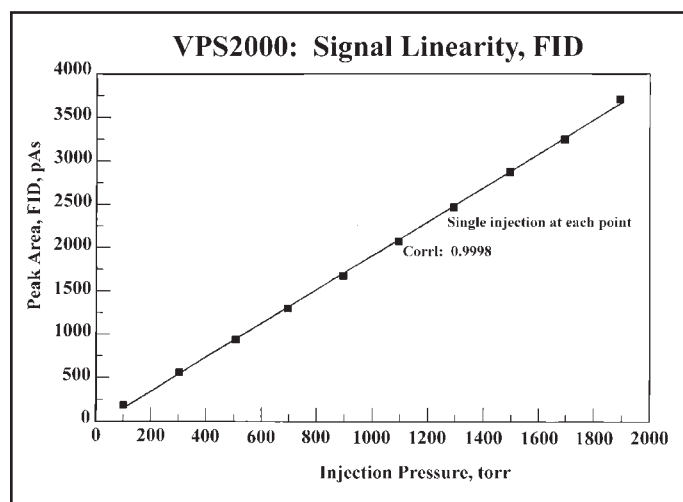


Fig. 1: Example range of linear values for the calibration blend

Vapor Phase Injection System

The Wasson-ECE Instrumentation **Vapor Phase Injection (VPI)** system uses an innovative, proprietary technique to vaporize liquid samples for injection in your existing gas chromatography system. This convenient laboratory system gives you flexibility and accuracy when switching between gas and liquid samples.

Advantages of VPI

The Wasson-ECE vapor phase injection system is not only more convenient than a typical liquid sample valve, it also gives you more accurate results. The VPI lets you inject liquid or gas phase samples with a single valve. All liquid samples are vaporized and run at a constant pressure, eliminating sample density changes that cause errors in liquid phase samples. This ensures sharp, easy-to-read peaks for all samples.

Sulfurs and Oxygenates

The VPI is available with optional Restek Silico Steel® parts for analyzing trace reactive analytes such as sulfurs and oxygenates.

Consistency and Accuracy

Wasson-ECE's unique, proprietary vaporization technique gives you an even and accurate gas sample. Other vaporizers use tubing with too large a volume, causing samples to fractionate when vaporized. This can lead to incomplete sample analysis. The Wasson-ECE vaporizer controls the injection volume so that all elements in the liquid sample are vaporized and sent to the GC simultaneously, giving you a complete and accurate analysis of your sample.



VPI Features

Inject liquid and gas samples with a single valve

High sample throughput

Purging technique reduces cross-contamination

Stop sample flow to the GC at any time

Controlled injection volume

Dynamic Blender

The dynamic blender is a portable blending device that dilutes a sample or a certified standard with a matrix gas of choice. The device can blend both liquids and gases. An inert flow path and heated bridge eliminate adsorption and condensation problems when blending gas standards that include sulfur, nitrogen, and other reactive compounds. The samples are fed directly to a gas chromatograph, eliminating the need to store multiple gas samples.



The Wasson-ECE Dynamic Blender provides reliable point-of-use calibration blends.

The onboard vaporizer allows the user to dilute and vaporize heavy liquid samples into the gas phase. The dynamic blender then delivers the sample to the gas chromatograph for reliable calibration. The final concentration is a function of the flow rates of the sample and the diluent gas.



Custom Sample Systems

Wasson-ECE has extensive experience building custom sample systems. The systems are custom built to your order. Systems can be purged and rated for use in Class I, Division 2, Groups C & D areas. They contain block and bleed valving to eliminate sample cross-contamination, and sample line filters. The sample boxes are heated if desired and can employ specially passivated tubing and components to prevent trace analyte adsorption.

Custom Design

The sample system is designed to meet your specific needs, and is custom built to order. This includes custom cabinet design, purging, temperature control, and valving. The systems are built to work with your existing systems and automation.

Sample System Features

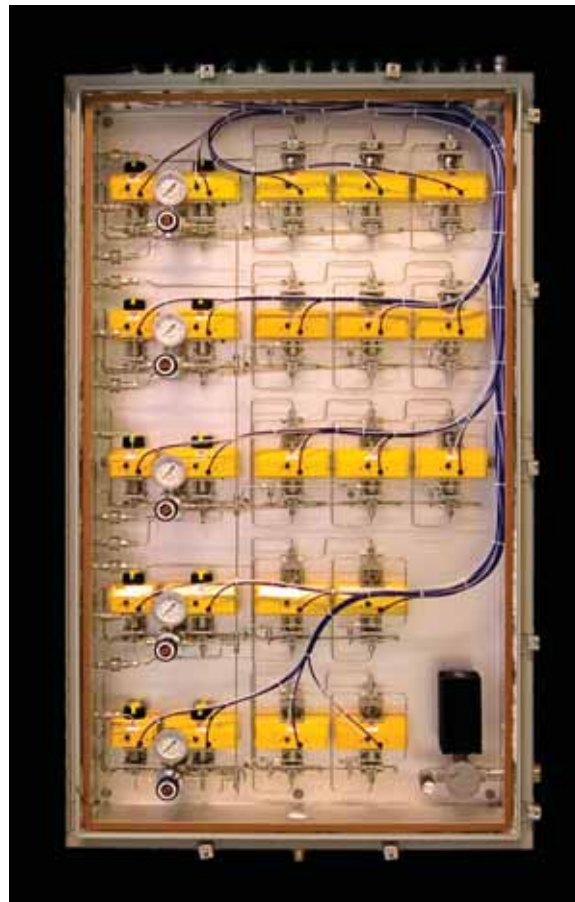
Class 1 Div II
Groups C and D Enclosures

Liquid and Gas Sampling Systems

Temperature Controlled Cabinets

Custom Valving and Plumbing to
Customer Specifications

One year Warranty



Thank you for your interest in Wasson-ECE Instrumentation.

Wasson-ECE strives to be the most creative, flexible, and reliable provider of custom analytical solutions. Our solution systems are backed by a one-year warranty on application performance and hardware. Our service team is available to assist you at any time during the life of your system.

In addition to specialty laboratory hardware, we also offer a variety of online and process GC applications, as well as complete software and instrumentation solutions for simulated distillation, detailed hydrocarbon analysis, high purity chemicals, environmental monitoring, and natural gas.

We specialize in creating custom solutions, so we encourage you to contact us today to discuss your unique chromatography requirements.

Why Wasson-ECE Instrumentation?

A one year warranty on the Agilent chassis along with all installed hardware.

Guaranteed analytical system performance.

On-site installation and training.



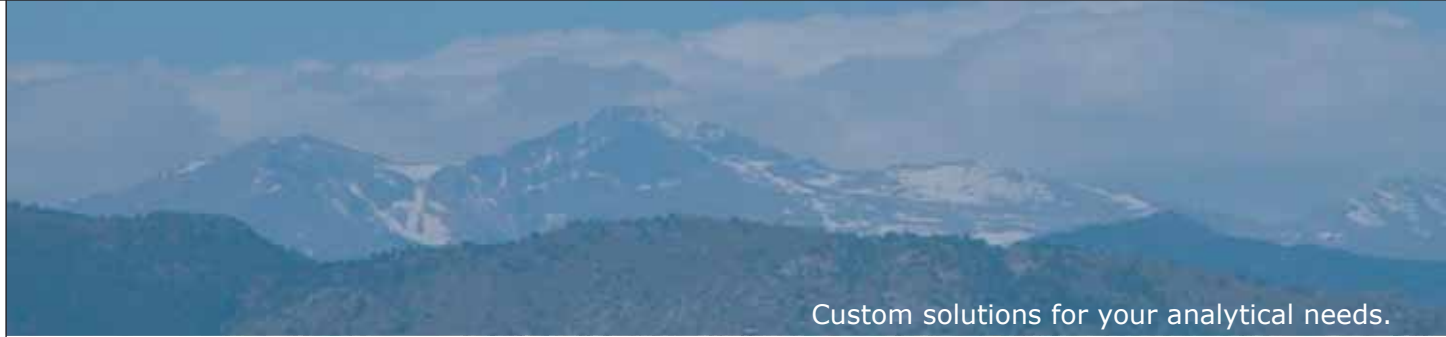
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Custom solutions for your analytical needs.