Custom Configured 5890 GC Systems

by Advanced Industrial Chemistry Corporation

Advanced Industrial Chemistry (A.I.C.) specializes in unique gas chromatographic (G.C.) detectors and in building custom gas chromatographic systems around those detectors. The ability to match the detector to the application means that A.I.C. can build systems that will specifically meet customer applications with out a lot of bells and whistles.

A.I.C. has developed methods and built custom G.C. systems for a number of industries including environmental, petroleum, consumer products, and research and development. With over 13 years in the gas chromatography business, A.I.C. offers the experience and the know how to meet customer needs in a cost effective manner.

Why choose a 5890 G.C.?

The Hewlett Packard (H.P.) 5890 G.C. is one of the most widely used G.C.'s in the world. It is an excellent, economical, alternative to buying a brand new G.C. The robust nature of the chassis, the extensive configuration options available and the ease of customization all combine to give customers the results they need at a price they can afford.

Injectors

Customers can choose from a variety of injectors including packed, cool on-column, splitless/split, or liquid sampling valve injections.

Pneumatics for the 5890 G.C. are either manual or Electronic Pressure Control.

Oven and Columns

The 5890 oven is large enough to easily accommodate numerous columns, either capillary, micro-packed, or packed depending upon the application. This greatly simplifies custom configuration and maintenance. If column operating conditions require it, then A.I.C. can install an isothermal secondary column oven on the top of the 5890 to allow for enhanced separations.

The 5890 G.C. oven can operate from -20 ^{0} C (as an option, depending on cryogenic liquids) up to 425 ^{0} C and has three available oven ramps.

Valves

Valves are critical to custom G.C. applications. Valves can be used for injections, for back flushing (to vent or to detector), or for heart cutting.

A.I.C. will install custom valving for the application specified. For some applications, as many as three valves can be used while most configurations will utilize two valves. Most valves are pneumatically driven requiring an external source of clean gas (air or nitrogen) controlled between 50 and 90 PSI.

Valves can be installed inside the oven (right or left hand side), on the left hand side of the G.C. (in the pneumatics cabinet), or on the top of the G.C. depending upon the application requirements.

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Industry Standard Detectors

A.I.C. offers the traditional H.P. 5890 detectors including the F.I.D., T.C.D., and F.P.D.. These detectors are the workhorse detectors in G.C. applications. F.I.D. detectors are typically used to measure hydrocarbons at p.p.m. to percent levels. The T.C.D. is a universal detector which is often used to measure components such as fixed gases. This application is often better served by the H.I.D. (see below.) The F.P.D. is a sulfur specific detector usually used to measure p.p.m. levels of sulfur containing hydrocarbons.

A.I.C. Detectors

A.I.C. also manufactures and sells a suite of detectors unique in the chromatographic industry. This includes a helium ionization detector (H.I.D.), and argon ionization detector (A.I.D.), a non-radioactive electron capture detector (E.C.D.), and a photoionization detector (P.I.D.)

The H.I.D., A.I.D., and E.C.D. detectors are all based on A.I.C.'s patented dielectric barrier discharge (D.B.D.) ionization source. This source is an extremely reliable and rugged ionization source capable of years of continuous un-interrupted service. Due to the stable nature of the D.B.D. source, A.I.C. detectors are able to operate without ultra-high purity gases, getters or blends.

The ability to use specialized detectors makes A.I.C. G.C.'s uniquely suited to challenging G.C. applications such as the measurement of fixed gases (including low level hydrogen), ammonia, carbonyl sulfide, and sulfur hexafluoride. The availability of these detectors also means that you don't buy unnecessary and expensive hardware that may not solve your problem.

Data systems

Customers can order systems with Chemstation data systems. In this case, the G.C. will require HPIB communications on the G.C. system which will incur additional costs. This is the best option for applications that will have to measure wide concentration ranges since this will allow full utilization of the linear dynamic range of the G.C. detector.

In addition, A.I.C. offers an optional external data system that connects to the G.C. via the analog signal out from the 5890 chassis. This is an excellent, cost effective approach for constituents that are at about the same concentration levels. An example of this approach would be the measurement of trace fixed gases in production helium where all of the trace gases are at low p.p.m. concentration.

Parts Availability

This is a question that comes up often with the 5890 G.C. and there are a number of answers to this question. First, A.I.C. offers a wide range of parts, from inventory, for the G.C.. Second, Agilent still offers many of the parts for the 5890. Third, Alpha-Omega Technologies is the recognized complete source for H.P. 5890 G.C. parts. Finally, there is a robust market for parts from a number of third party vendors in the United States. Names of such vendors can be provided upon request.

Physical Specifications

Electrical: 120VAC, 60 Hz, 20 amp service
Dimensions: 20" X 26" X 18" (51cm X 66cm X 46cm)
Weight: ~100 lbs (depending on configuration)
(~45 kg's)

Typical Applications

Examples of instruments that A.I.C. can custom build include:

Measurement of p.p.m. levels oxygenates in L.P.G. using a pre-column and an oxygen specific column with F.I.D. detection.

Measurement of fixed gases at p.p.m. to percent levels using H.I.D.

Measurement of p.p.m. carbonyl sulfide in CO2 using A.I.D.

Warranty

A.I.C. offers a six month warranty on all custom configured H.P. 5890 G.C. systems.

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