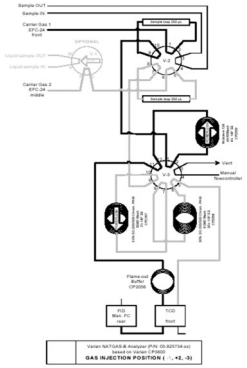
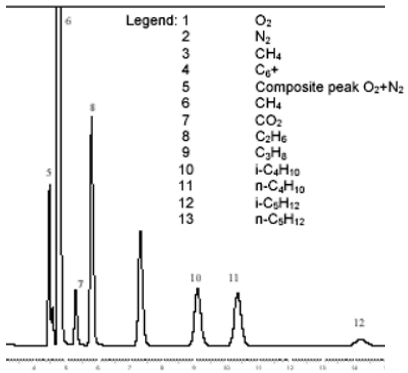
GC & GC/MS Categorisation Quick Reference Guide

Chrom Solutions
Knowledge When You Need It

This GC & GC/MS guide offers practical advice which will assist users identifying the differences between analysers, custom solutions. Also between regular GC and GC/MS configurations. ChromSolutions would describe a "regular" GC as a single channel instrument and would have an injector column and detector. The most common configuration would be a split/splitless injector, capillary column and flame ionisation detector (FID). The instrument may have a second channel configured the same or with a different injector, column or detector. Even with a second channel this configuration would still considered to be a "regular GC". This would still be true even if a third channel or a mass selective detector MSD was added. With the addition of automated sample preparation configurations can become complex and more difficult to understand and manage efficiently. However this would still be considered a regular configuration until an application or method have been applied which performs to a set criteria.

GC Analysers





Historically "analysers" were developed for the oil and gas industry and would be designed to analyse specific compounds or classes of compounds. Often the analysers use multi dimensional chromatography (MDC). This adds complexity to the analysis but can save a tremendous amount of time and effort. Typically a natural gas B analyser would analyse C1-C6 individually and C6+ plus other inert gases. Instruments of this type would be evaluated by committees and configurations agreed for the analysis of that particular set of materials. With the Natural gas B analyser the calorific value of the gas could be established. This is just one example of many analysers in the energy market and the methods governed by bodies such as IP, EN and ASTM, The analysers could be quite complex involving multiple valves/injectors, flows/pressures, columns/traps, and detectors. Plumbing diagrams would be supplied with the instrumentation along with reference chromatograms for the application.
Analysers have now been extended into the environmental market (e.g. Greenhouse Gas Analyser) and many other industries.

Custom Solutions GC and GC/MS

Custom solution GC & GC/MS is typically for small companies involved in research or pilot plant operations, with very little experience of analytically measurement. With modern technology it may involve automated sample preparation devices to deal with gases, liquids or solids. It also could involve incorporating specialized machine parts, additional electronic devices and may have bespoke software or at least bespoke reporting capabilities in addition to the standard data-handling software. Typically the configuration will be moderate to highly complex.
In addition, apart from providing a robust separation, detection and method, performance criteria should be met with regard to the application. This will at least be LOD's and dynamic ranges of all the components and should include repeatability, accuracy and robustness information as specified when purchasing the customized solution.

GC & GC/MS Option	Configuration	Separation	Method	Performance Criteria	Notes
Regular GC	Typically Simple	No	No	No	Customer creates there own methods and criteria.
Analyser	Moderate to highly complex	Yes	Yes	Occasionally and basic.	Usually based on legislation or regulatory bodies.
Custom Solution	Typically moderate to highly complex	Yes	Yes	Always and typically highly detailed.	Based on user defined criteria. Can include automated sampling bespoke parts and software.

Conclusion

There are significant differences between understanding a regular GC, an analyser and a custom solution analysis and a detailed theoretical and practical knowledge is required to specify, understand and troubleshoot the more complex systems. It is also important to note that analysers and custom solution equipment will have significantly higher purchasing and support cost due to their complexity and if often mission critical equipment, therefore remote specification and support is also recommended to maintain instrument and application uptime.

ChromSolutions Ltd

What we offer at ChromSolutions is our wealth of experience in analytical instrument sales and support (over 110 years distributed through the members of our company). We can help you from defining your requirements to the implementation of a robust analyser or custom solution analysis.

For more information on customised solutions please contact us:

Chrom Solutions
92 Hobletts Road
Hemel Hempstead, HP2 5LP, UK

Tel: +44 (0) 1442 402399
Mob: +44 (0) 7966 783845
Email: info@chromsolutions.co.uk
Website: http://www.chromsolutions.co.uk