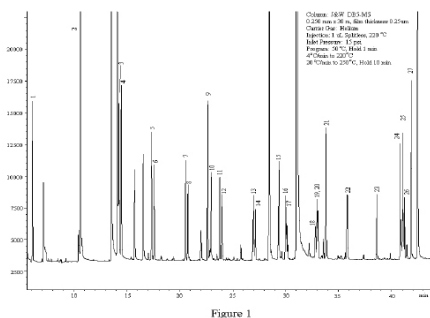


Analytical Market – Gas Chromatography

Application note A006H-AN01C03-0510C



Sensitivity, reliability and selectivity, precision quantitation within a reasonable time frame are among the expectations of a GC user. Bronkhorst High-Tech fully understands these demands both from the user's point of view, and from GC's manufacturer's perspective.

Aware of the analysis market prospect, Bronkhorst High-Tech has been developing throughout the years innovative solutions to meet top quality GC manufacturer's high standards.

- ◆ **Process Analytical Technology**
- ◆ **Clinical Research and Toxicology**



Analytical laboratory

Application requirements

Most integrators need space saving solutions involving instruments with analogue or digital (bus) communication.

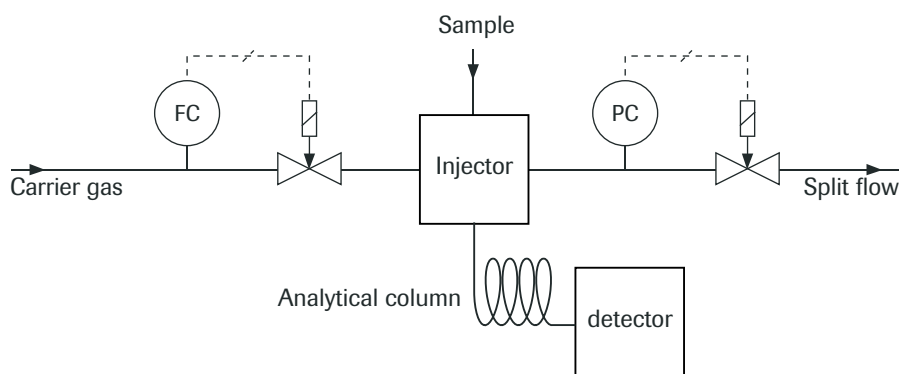
Furthermore, customized compact modules, pre-tested for plug and play integration are required.

Reliable instruments, able to guarantee low cost of ownership, are preferred.

Important topics

- ◆ Low cost of ownership
- ◆ Compact
- ◆ Simple integration
- ◆ Pre-tested "Plug and Play" units

Process solution



A schematic technical diagram showing our product included in the customer's process

Enhancing analysers performance

Gas chromatography is a widely used analysis technique which allows the qualitative and quantitative characterization of a sample. Such sample is injected through a sample injector in a flow of carrier gas. The gas flow is controlled using a high accuracy mass flow controller. The sample to analyse will go through the stationary heated column where analytes elute at different times. Analytes are then detected by a specific type of detector depending on the GC technique used. Each analyte will generate a different peak, enabling sample's constituents identification. The attained peaks also permit a quantitative analysis through the integration of the peaks areas.

Chemical plants frequently use these analysers to check process parameters in real time, thereby requiring faster run times. Such a requirement is hard to achieve, because it is difficult to reach a good balance between faster cycles while keeping acceptable levels of separation. Analysis becomes much faster if a higher flow rate is used, but by doing so the ►

separation between analytes will be less efficient, therefore increasing flow rates may compromise the analyser's sensitivity. This drawback may be overcome by promoting flow rate variations based on pressure control hence achieving faster flow rates whenever possible and slower flow rates when necessary.



MANI-FLOW systems for GC applications

Recommended Products



IQ+FLOW Mass Flow Controller

IQ+FLOW series, ultra compact Thermal Mass Flow Meter / Mass Flow Controller with chip-based sensor technology. Both analog and digital output, elastomer sealed. **World's smallest Mass Flow Controller!** Due to the use of micro solid state technology (MEMS), Bronkhorst has been able to halve the footprint dimension to 0.75".

- ◆ Flow ranges min. 0.2...10 sccm / max. 0.1...5 slm (storage of max. 8 calibration curves)
- ◆ Very stable Zero, due to the thermally balanced chip-sensor
- ◆ Compact assembly ensures space efficiency
- ◆ Economical solution, low cost of ownership
- ◆ Fast response, down to 150 msec
- ◆ Analog and digital (RS232) communication



IQ+FLOW Pressure Controller

IQ+FLOW series, ultra compact Pressure Meters and Controllers with chip-based sensor technology. Both analog and digital output, elastomer sealed. **World's smallest Pressure Controller!** Due to the use of micro solid state technology (MEMS), Bronkhorst has been able to halve the footprint dimension to 0.75".

- ◆ min 0.3...15 psi / max. 3...150 psi
- ◆ Very stable Zero
- ◆ Compact assembly ensures space efficiency
- ◆ Economical solution, low cost of ownership
- ◆ Fast response
- ◆ Analog and digital (RS232) communication



IQ+FLOW Multi-channel

Based on the micro system technology of IQ+FLOW® series, Bronkhorst High-Tech also offers the possibility to combine functional modules on a compact manifold. The Multi-channel concept offers the following functional modules: Flow meter, Pressure meter, Control valve, Three-way valve, Shut-off valve, Filter and a Mixing chamber.

- ◆ Compact assembly ensures space efficiency
- ◆ Economical solution, low cost of ownership
- ◆ Tubeless construction reduces potential leak points
- ◆ Top-mount modules; easily accessible
- ◆ Pre-tested "Plug and Play" units, reducing custom testing requirements
- ◆ Analog and digital (RS232, RS485) communication



MANI-FLOW

Combines various functions into one compact device. On a compact manifold one or more mass flow or pressure sensors modules can be combined with control valves, two- or three-way valves, shut-off valves, filters or any other functional module as per customer's request.

- ◆ Compact assembly ensures space efficiency
- ◆ Economical solution, low cost of ownership
- ◆ Combination of functions on one manifold reduces potential leak points
- ◆ Modular construction enables easy exchange of functional modules
- ◆ Pre-tested "Plug and Play" units, reducing custom testing requirements
- ◆ Analog and digital (RS232, RS485) communication

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Gas Chromatography A006H-AN01C03-1110C

AN: Analytical market
01: Analytical equipment
C03: Chromatography, gas