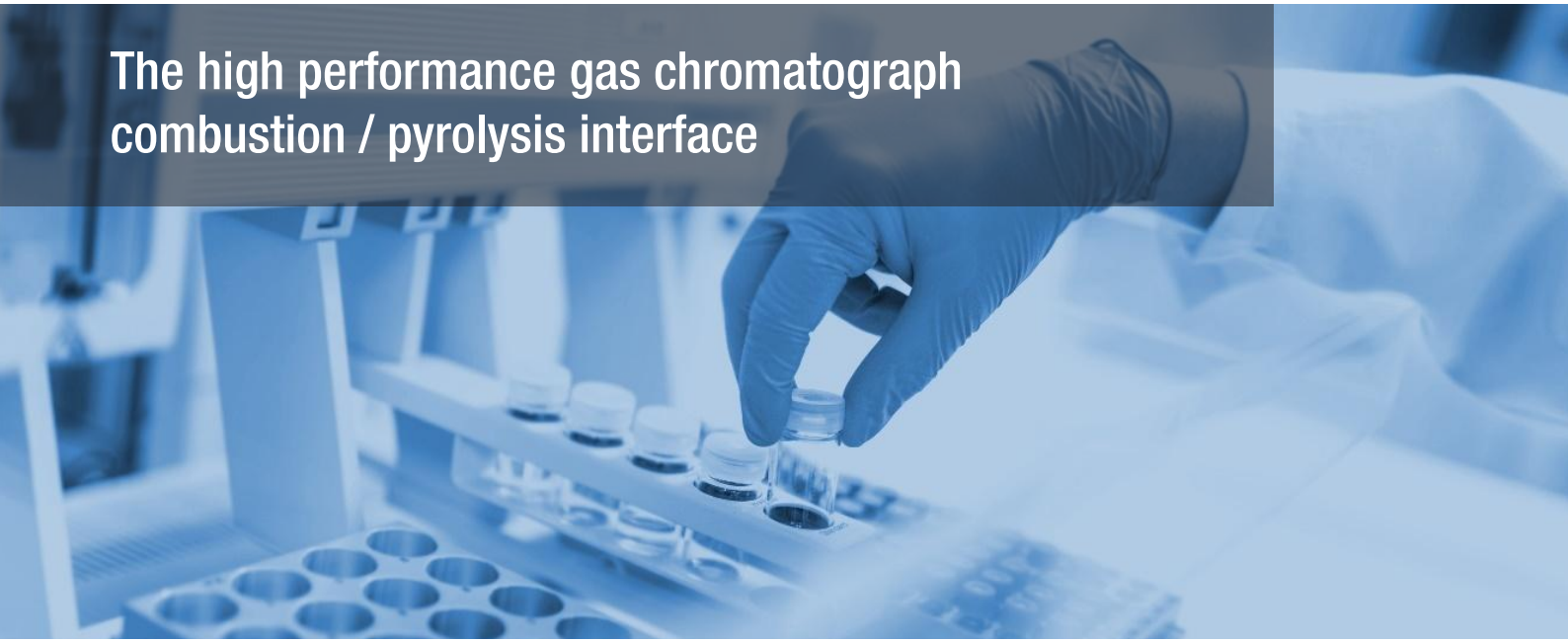
sercon
innovators in isotopes

The Sercon Orchid



The high performance gas chromatograph combustion / pyrolysis interface

The Sercon Orchid is the high performance combustion / pyrolysis interface for hyphenation of GC to IRMS instruments, allowing combustion or pyrolysis of compounds in a mixture. The Orchid preserves chromatography during sample conversion, ensuring that sample peaks remain well resolved when they reach the IRMS. The high sensitivity of the HS2022 ensures excellent data even for small peaks within a sample mixture.

Key features include:

- Temperature programmable furnace up to 1500˚C
- Thermally stable gas flow throughout maintains chromatography
- Versatility of analysis through design – compatible with all commercially available GC and GC-MS systems, including those from Agilent and Shimadzu
- Full integration with GC autosamplers, inlets and additional detectors

Sample measurement:

- Furnace tube designs optimised for ^{13}C, ^{15}N, ^{2}H and ^{18}O measurements
- Dynamic water removal by low dead-volume hydrophilic membrane
- Re-oxidation of combustion chemicals easily achieved using built in oxygen regeneration line, avoiding the need for extra valves and 'back flushing'

The Sercon Orchid The high performance gas chromatograph combustion / pyrolysis interface

The Orchid interface can be fully integrated with all commercially available GC and GC-MS systems, including those from Agilent and Shimadzu – Sercon have a strong working relationship with both companies. The GC systems can be supplied with additional inlets and detectors as required by the application of interest.

$\delta^{13}C$ Analysis

Peaks eluting from the capillary GC enter the combustion tube and C in the peaks is converted over an oxidative surface to CO_2. A hydrophilic membrane dryer removes water vapour, and $\delta^{13}C$ is measured via CO_2 by the HS2022. Re-oxidation of combustion chemicals is easily achieved using a built-in oxygen regeneration line.

$\delta^{15}N$ Analysis

Peaks eluting from the capillary GC enter the combustion tube and N in the peaks is converted over an oxidative surface to NO_x and N_2. A reduction furnace then reduces all NO_x species to N_2 to ensure no fractionation. A hydrophilic membrane dryer removes water vapour and a liquid nitrogen trap removes CO_2 to prevent CO formation in the IRMS ion source. $\delta^{15}N$ is measured via N_2 by the HS2022.

$\delta^{18}O$ and $\delta^{2}H$ Analysis

In pyrolysis mode, peaks eluting from the capillary GC enter the pyrolysis tube, where O is converted to CO or H is converted to H_2, depending on the Orchid configuration. $\delta^{18}O$ is measured via CO, or $\delta^{2}H$ via H_2, by the HS2022.

Custom solutions manual

For unique applications, we can provide a custom solutions manual, plumbing diagrams, and comprehensive on-site training to ensure your system is configured precisely to your requirements. We can offer advice on sample preparation, inlet type and liner, column type, and method development.

Inlet options:

Split/splitless, PTV, SPME, on-column, and multi-mode injectors

Autosampler options:

Carousel, tray and robotic including and PAL and Gerstel isotube

Additional Detector options:

FID, ECD, TCD

Service and Support

At Sercon we pride ourselves on the support available to customers, and consistently receive good feedback on the service we provide. We offer remote support via telephone, email and remote log on. If an engineer visit is necessary we provide rapid on-site response from our team of specialist, experienced engineers.

Gas	Ref Gas (‰ vs ref)	Norm on-column (‰ vs ref)	Small on-column (‰ vs ref)
CO_2 (^{13}C)	0.1	0.2 (100 ng)	0.5 (10 ng)
CO_2 (^{18}O)	0.1	0.4 (160 ng) 0.4 (1 nl H_2O)	
N_2 (^{15}N)	0.1	0.5 (100 ng)	1.5 (14 ng)
H_2 (^{2}H)	1.5	3.0 (250 ng) 3.0 (5 nl H_2O)	

Power and Gas Requirements	
Power	100-240 VAC
Helium	99.998%
Oxygen	99.998%

Tel: +44 (0)1270 580008
Email: sales@sercongroup.com
www.sercongroup.com

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