



**456 GC**

**GAS CHROMATOGRAPH**

EVEN WHEN YOUR REQUIREMENTS DEMAND THE MAXIMUM FROM A GAS CHROMATOGRAPH, THE SCION 456-GC PLATFORM WILL EASILY MEET THESE NEEDS.

Designed for and by Chromatographers, the 456-GC offers the ultimate performance & flexibility to fit even the toughest application needs. The 456-GC delivers what matters most - results with confidence.

The 456-GC allows for pushing productivity, without compromising on data quality. At the same time, we in SCION are going every extra mile to make your GC experience as efficient and easy as possible.

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## Key Value

### Flexibility

- Three channel architecture, with up to three Inlets with four detectors (including MS)
- Proven analyser solutions
- Custom configurability with support/options for backflush/Deans, seven valves, 16 programmable events, heated external valve oven, gasifier, pressure station, samples selection.

### Performance & Productivity

- Autosampler supported for enhanced productivity and best precision.
- 8400/8410 Samplers with dual/duplicate injection modes
- Headspace, P&T, CTC, SPME, Pyrolyzer
- Fastest Ramping Oven (180°C/min)
- Hydrogen carrier and ATEX compliance
- Advanced high-pressure EFC (up to 150 Psi)
- Inert flow paths
- Constant linear velocity mode for optimum separation
- 600Hz data for all detectors

### Ease of Use

- Large high resolution full-colour touchscreen, 13 Languages supported
- CompassCDS™ Chromatography Data System for client server networked and stand-alone solutions, 21CFR11 compliant
- CompassCDS™ Sample Streamer, IntelliUpdate, 1-Button Interface, and various plug-ins for dedicated industry-standard solutions.



## What is your ultimate configuration?



THE 456-GC PLATFORM OFFERS THE ULTIMATE CONFIGURABILITY, ALLOWING IT TO BE ADAPTED FOR ANY APPLICATION, IN ANY MARKET, AT ANY GIVEN SET OF SPECIFICATIONS.

### Typical solution examples are:

- Multiple independent channels in parallel, allowing you to run multiple methods in one instrument simultaneously or independently (e.g. in QC labs with short response time running many different methods)
- High throughput solutions for ultimate productivity (e.g. fast ramping oven, hydrogen carrier, high pressure EFC)
- Multiple valves, columns and detectors (e.g. for natural gas or refinery gas) for separating complex gases or liquids. Typically, these predefined/preconfigured solutions are available for a particular sample type, and often include options to ensure sample integrity is respected (gasifier, pressure station, inert sample path)

- Combination of single or dual inlet to MS and a selective detector(s). Combining selectivity and unequivocal compound identification from the MS
- High-low concentration designs, combining two different inlets or detectors to cover a widest possible concentration range (e.g. S/SL + PTV/LVI)

Whatever the requirement, the 456-GC will deliver. Our experienced teams can assist in designing and building a solution for any analytical challenge.

### Detectors:

FID, ECD, TCD, PFPD, NPD, PDHID, MS, VuV

### Injectors:

S/SL, PTV/LVI, COC, Packed/Wide bore, GSV, LSV

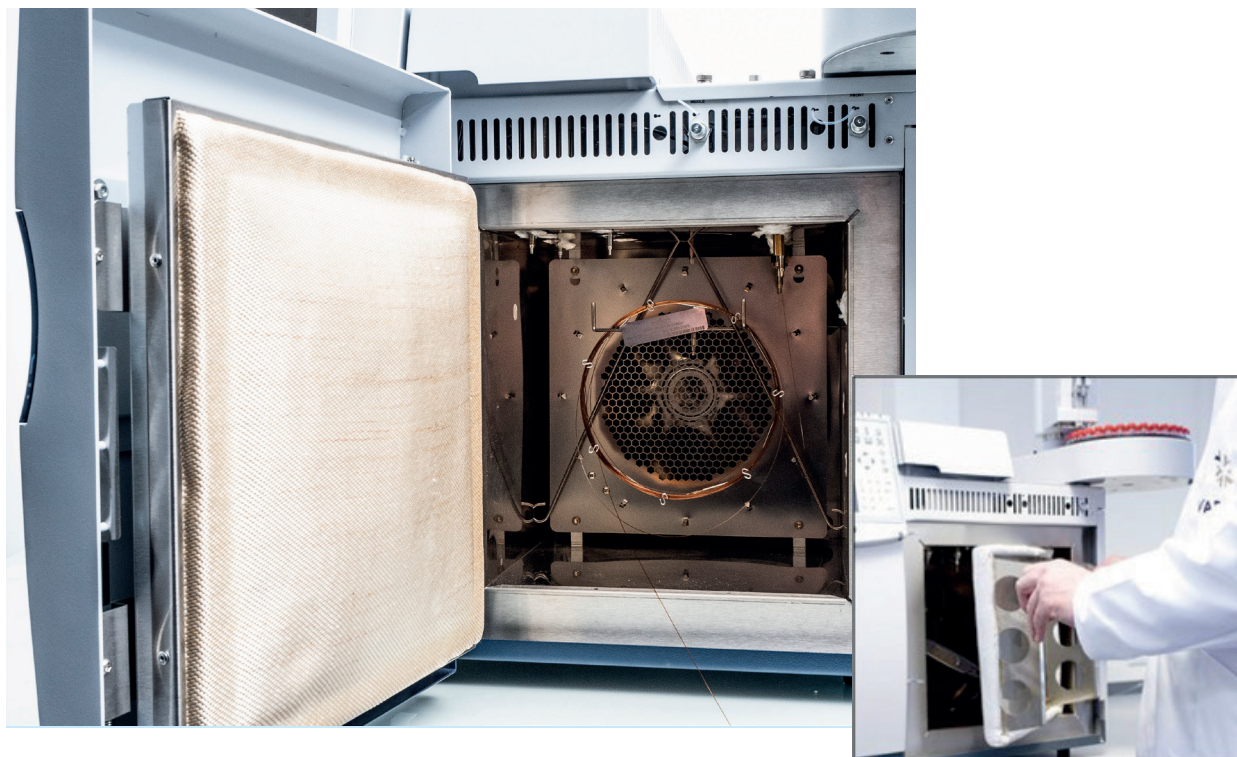
### EFC:

Nine modules / 21 channels, backflush option.  
High pressure Inlets (0-150 Psi)

Fast oven up to 180°/min with insert

## Maximise your productivity

### Productivity and Analysis Time



When Hydrogen carrier gas is at high temperature short or narrow bore column, and a fast ramping oven, are the tools that are essential.

Hydrogen carrier generally cuts cycle time in half, whereas high column flows and smart column dimension may further compress runtime.

A high-performance oven ensures fastest-in-market programming rates (up to 180°/min with the clever column oven insert) and fast cool down using liquid nitrogen or carbon dioxide.

Increases in productivity in excess of a factor of five

Temperature Range (°C)	456-GC Rates (°C/min)	With oven Insert
50-70	150	180
70-115	95	115
115-175	70	90
175-300	45	65
300-450	30	45

*Column ramping table*

are commonly achievable, without compromise to data integrity.

In order to match the decreasing peak widths the 456-GC now has an unparalleled 600Hz data rate on all detectors. This allows for sufficient data-points over each fast peak to ensure proper peak integration and optimal analytical precision..

The 456-GC has ATEX Certification warranting safety when using hydrogen as a carrier. It can also be equipped with a hydrogen sensor.

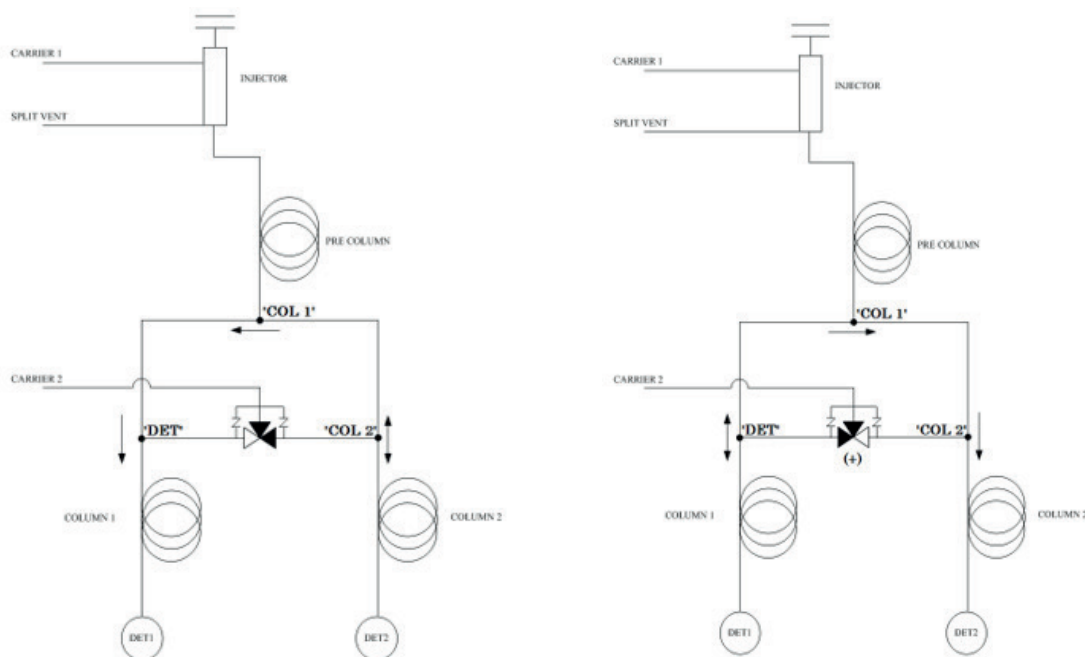
#### Key value

- Fastest ramping oven (180°C/min)
- Advanced high-pressure EFC (up to 150 Psi)
- Hydrogen carrier capability, ATEX compliance, hydrogen sensor
- 600 Hz detector data rate
- Constant linear velocity mode for optimum separation



## Maximise your productivity

### Smart designs, faster results



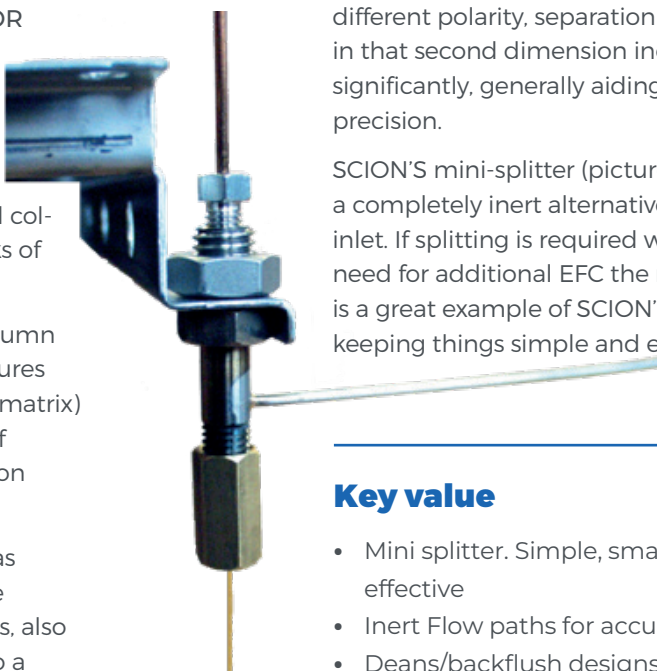
**Schematic representation of the DEANS Switching system.**  
The arrows indicate the flow direction of the carrier gas.

FLOW SPLITTING, BACKFLUSHING AND DEANS SWITCHING ARE SMART SOLUTIONS FOR IMPROVING CYCLE TIMES, ANALYTICAL PERFORMANCE AND THE ROBUSTNESS OF GC METHODS.

Backflushing not only reduces analysis cycle time but also protects the analytical column by reversing column flow once peaks of interest have eluted.

This eliminates the need for extended column oven programming at elevated temperatures usually required to elute highly retained (matrix) components injected with compounds of interest, generally stabilising peak retention times, and prolonging column lifetime.

Deans switching (sometimes referred to as heart-cut) is a technique used to 'cut' the component(s) of interest from the analysis, also redirecting any co-eluting components to a secondary analytical column.

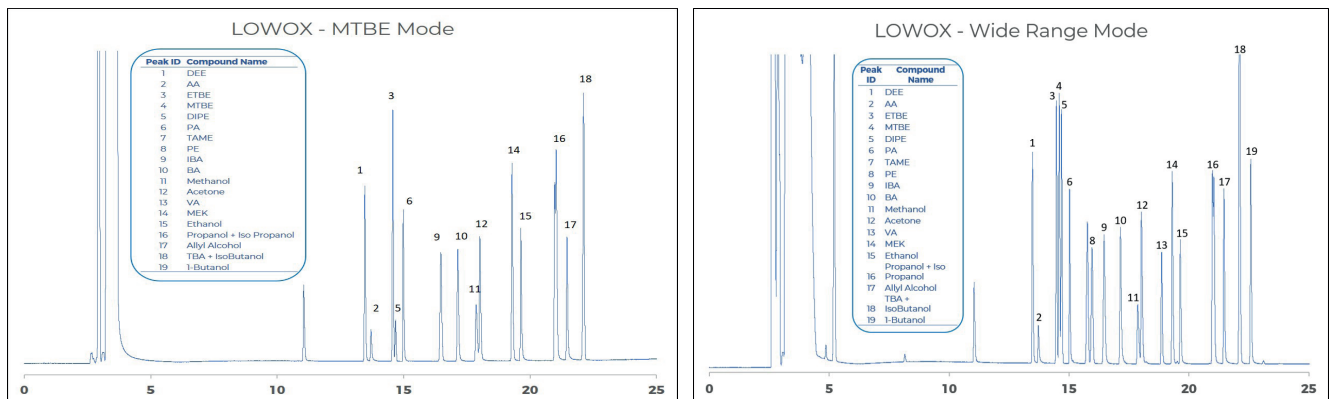


Since that column generally has a different polarity, separation power in that second dimension increases significantly, generally aiding the method precision.

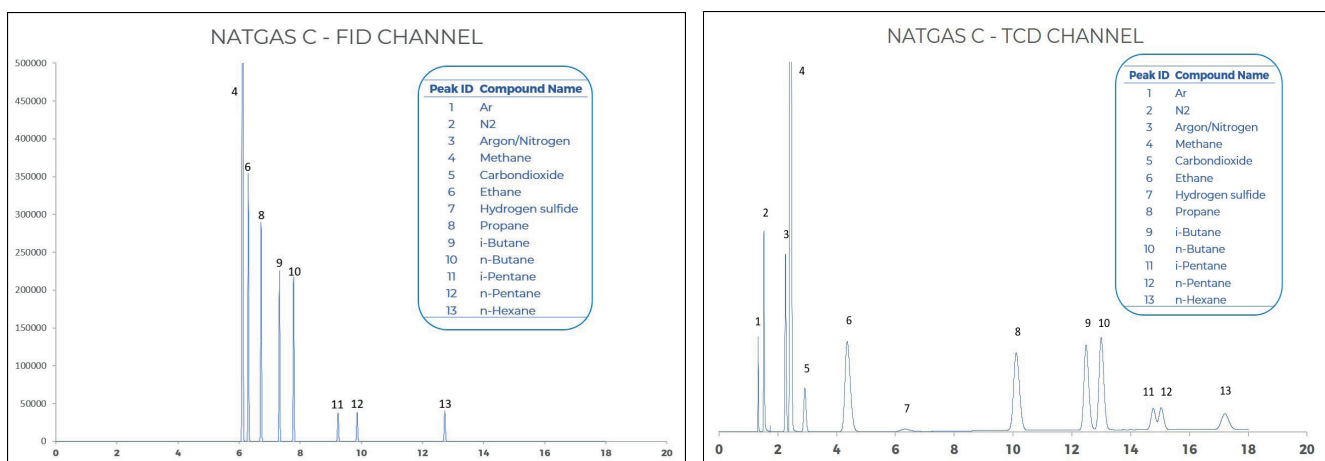
SCION'S mini-splitter (pictured left) is a completely inert alternative to a S/SL inlet. If splitting is required without the need for additional EFC the mini-splitter is a great example of SCION's way of keeping things simple and effective.

### Key value

- Mini splitter. Simple, small, cost effective
- Inert Flow paths for accurate results
- Deans/backflush designs for fastest throughput and data confidence



The LOWOX analyser measures oxygen containing hydrocarbons with a boiling range up to 100°C. Higher boiling components may be present in the sample but will not be measured. The LOWOX analyser is capable of operating in two modes; the wide range mode and the MTBE mode. In MTBE mode, only the components up to MTBE, including the lighter components will be measured whereas in the wide range all components lighter than Propylether will be measured. Post analysis of each of the oxygenates are automatically quantified and reported by the Compass Chromatography Data Handling Software. The 19 components found in the chromatograms are clearly separated and defined.



Natural gas analysis involves the quantitation of nitrogen, carbon dioxide, C1 through C5 hydrocarbons as individual components with C6 and heavier hydrocarbons are combined and measured as a single peak. The SCION natural gas analyser is designed for the extended analysis of natural gas and natural gas liquids up to C16 or higher, with the compositional breakdown of the C6+ group in a dual channel output.

## Automation solutions

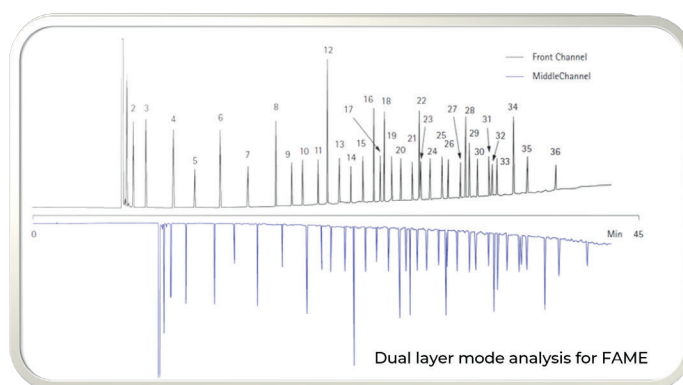
### Automation of analysis



For basic liquid sampling we have the CP-8410 and CP-8400 liquid samplers, maximising productivity and improving analytical precision.

- With its large 100 x 2ml capacity sample tray, the CP-8400 will simply keep going overnight, or even a weekend, adding value to your business around the clock
- The CP-8400 sampler can also be used in SPME and headspace modes
- The more cost-effective CP-8410 has a smaller capacity tray, but allows for three vial sizes (2/5/10 ml), making it more flexible, while still enjoying accuracy and precision of data
- Both CP-8400 and CP-8410 have the dual/duplicate functionality, where the autosampler delivers to two inlets within the same run. In dual mode throughput doubles by running two

different samples into two identical channels. In duplicate mode, the same sample is injected into two channels with different columns, typically for confirmation purposes (e.g. dual ECD methods for chlorinated pesticides), or a combination of MS and PFPD for dithiocarbamate analysis





The CTC PAL 3 platform is the ultimate does-it-all solution that can be operated in many modes and delivers ultimate capacity for applications where this is required.

Injection modes are interchangeable, even automated switching in-sequence. The flexibility of the PAL3 allows for complete automation of sample preparation and injection, adding another level of method precision and automation.

#### **Sampling modes and options:**

- Liquid sampling
- ITEX
- Headspace
- SPME
- Solid sampling
- Heated orbital shaker
- Dilution, mixing etc.

Other dedicated automation solutions are available for headspace, purge & trap, and pyrolysis.



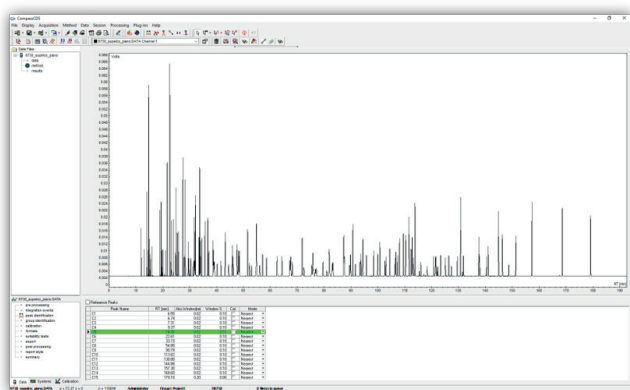


## Compass CDS

### Simply Powerful



CompassCDS is SCION Instruments' universal chromatography data system designed for instrument control, data acquisition, processing and reporting. With its unique capacity for customisation, CompassCDS provides users with a powerful data analysis tool with extensive calibration and calculation options. Originating from the legacy Galaxie CDS, CompassCDS has evolved into the next generation CDS which easily integrates with LIMS, SCADA and other commonly used data management systems.



**The Compass base interface**

CompassCDS can either be installed as a simple, single PC workstation application controlling a couple of instruments, or as a fully scalable multi-lab, multi-instrument networked enterprise client-server solution, or anything in between.

The CompassCDS operator-friendly graphical user interface (GUI) has been designed to improve the operator experience by streamlining workflows, thereby increasing sample throughput and overall productivity. The dual view function, when used in conjunction with the InstantView option, enables users to run samples, view live data acquisition and review and report results

from a single screen without the need to retrieve any data files. CompassCDS also comes standard with the feature set required to support laboratories that are required to support laboratories that are required to comply with 21 CFR Part 11.

CompassCDS provides users with one of the most powerful chromatography data management solutions available today.

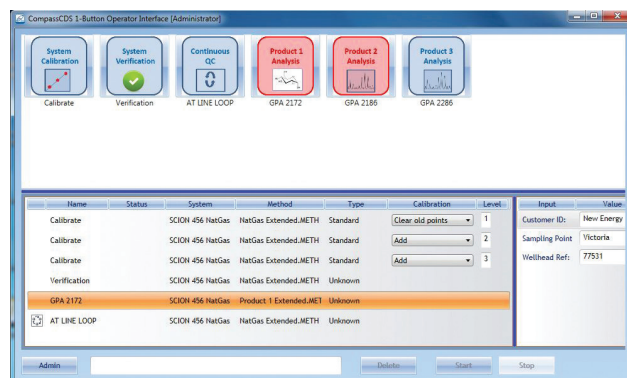
However, there are often application specific instances that require additional flexibility and for these,

Compass CDS has a comprehensive and well-documented API that enables the development of custom pre- and post-run plug-ins.

Examples of the many plug-ins and features currently available include:

**1-Button Interface** – simplified interface overlay for shift operators.

The simple overlay allows operators to select method and start a run without the need for having in-depth knowledge of CompassCDS (or even chromatography).

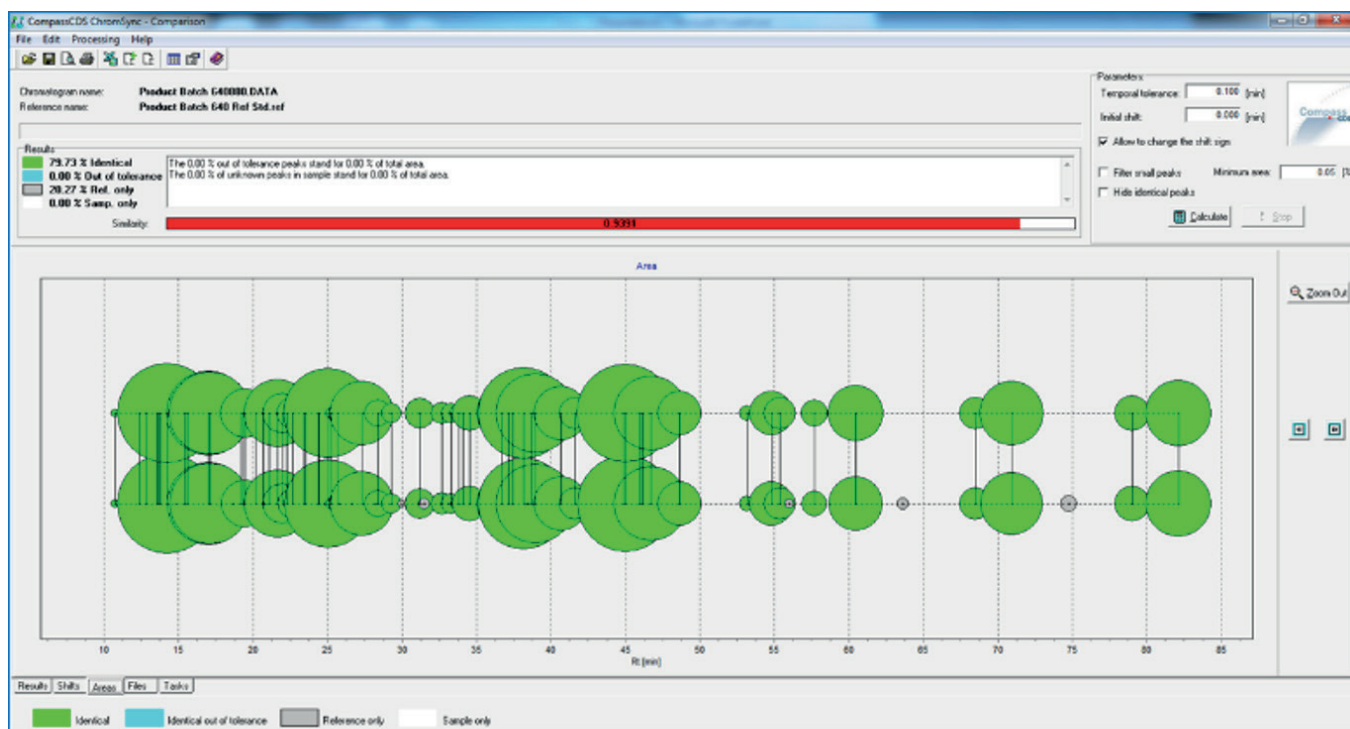


**The 1-Button start feature**

**Natural gas, simulated distillation and detailed hydrocarbon analysis reporting tools** - customisable post-run plug-ins that performs specific GPA/ISO/ASTM calculations for multichannel natural gas/refinery gas, SIMDIS and DHA Analysers.

**ChromSync** – Compares complex sample chromatograms against reference standard runs. Chromatograms are represented as X-Y bubble charts, and differences between two datafiles are

identified automatically. This allows chemists tasked with comparing complicated chromatograms a very efficient way to compare data, as they can focus directly on additional and missing components, or significant differences in key component concentrations, instead of comparing peak area output reports manually. Examples of application are off-flavor determinations in beverages (beer, wine) and QC controls in fragrance products.



### The Compass CDS ChromSync feature

**IntelliUpdate** – for auto-updating peak retention times. This is the 21CFR11 way to update peak retention times and deal with ageing column, without changes to the actual chromatographic standard operating protocol.

**Sample Streamer** – Allows LIMS to prioritise and drive CompassCDS sequences. No more manual creation of sample sequences is required, eliminating possibilities for human error, and saving valuable operator time.

**ANI ML** – Industry Standard PDF reporting format.

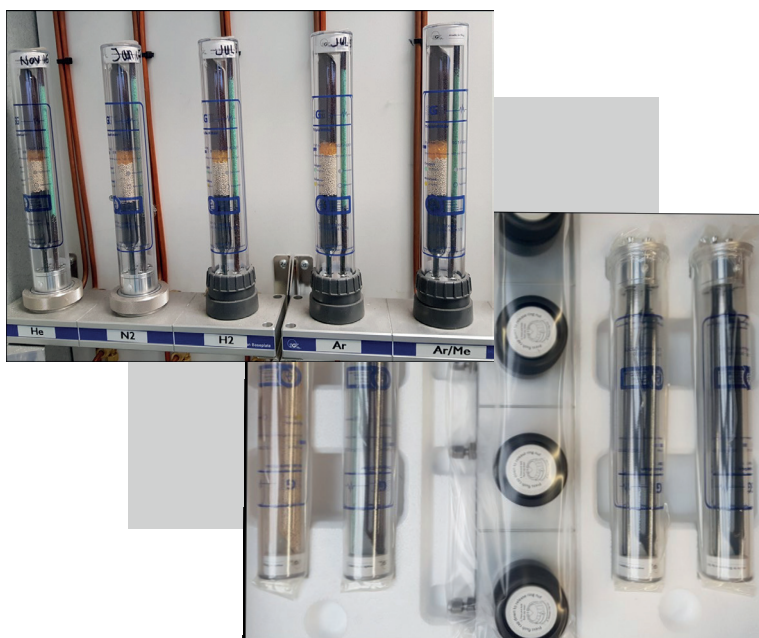
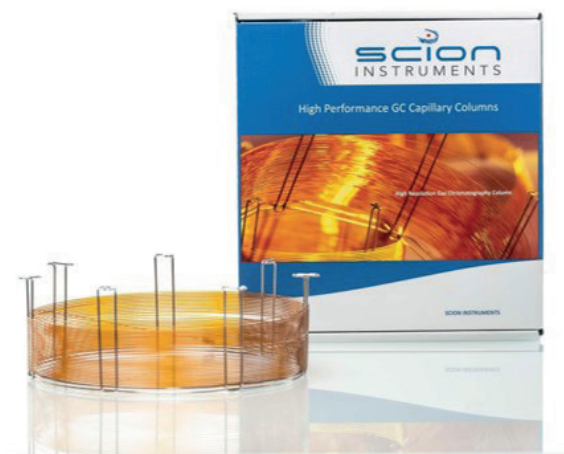
### Key Value

- Easy to work with
- Scalable. CompassCDS delivers in a single stand-alone and in client/server solution
- 21CFR11 compliance ensured
- Flexible reporting, dedicated plugins and tools for specific methods or jobs (e.g. DHA, SIMDIS, RGA/NGA)
- Enhanced productivity, improved workflow
- Multivendor platform support

## SCION Columns

SCION GC columns span a broad range of column lengths, diameters, stationary phases, and materials including: Fused Silica (FS) and Inert Steel (IS). Ideal for either routine or research type analyses, SCION GC columns cover a wide range of applications and include:

- Standard WCOT (Wall Coated Open Tubular)
- Solid Stationary Phase PLOT (Porous Layer Open Tubular)
- Inert Steel micro-packed and packed



## SCION Super Clean™ Gas Filters

SCION Gas Purification Systems have the range to satisfy your needs from individual to combination filters, from ultra purity combined with ultra capacity, to all-in-one solution kits. Innovative features designed into the product yield extensive benefits to the user.

- Ultra-high capacity for long life, less change and improved productivity
- High-purity output ensures 99.9999%
- "Quick connect" fittings for easy, leak-tight filter changes
- Glass internals prevent diffusion; plastic externally for safety
- Easy-to-read indicators for planned maintenance and improved up-time

## SCION Consumables

SCION produces a wide range of high quality consumables designed to keep your equipment working at optimum levels. Genuine consumables available include:

- Full range of GC vials, caps and inserts
- Bleed and temperature-optimised septa
- Manual and auto-sampler GC syringes



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