

# Excellent by nature

high performance OPTIC 3 and applications



a total analytical solution

**ATAS/|GL**  
international

# Excellent by nature

**Excellent effectivity, efficient performance and great flexibility. OPTIC 3: a fully programmable injector for gas chromatography. Designed for a range of injection modes to be selected and optimised to suit sample characteristics thus adding to the capabilities of the laboratory.**

The OPTIC 3 is the result of years of innovations in GC injection. It incorporates all facilities to control additional flow and pressure parameters for sample introduction. Such flexibility enables analytical strategies to be reappraised to raise analytical standards by optimising the sample introduction process. The specially designed software offers a user-friendly solution for every analytical need. Because sample preparation time is significantly reduced, operational costs are too. By saving 30 minutes in the preparation stage an investment in the OPTIC 3 can be returned in a few hundred injections. As a high performance injector, the OPTIC 3 is the perfect interface between sample and analytical column. The optional available Cryo Trap widens the range of applications.



Three generations of ATAS GL experienced technology.

## The OPTIC 3:

- Handles the widest range of applications
- Has unmatched flexibility for choice of injections
- Programmed temperature and flow control
- Easily installed on all common GCs (different GCs, same performance)
- Designed for full automation
- Offers a complete software-controlled efficient and effective performance

### **Increasing the capacity of GC systems with the high performance OPTIC 3 injector:**

- One injector for different GC properties
- Uncompromised analyses
- Optimised sample introduction
- Maximised chromatography efficiency
- Enables standardisation on a single system
- Assists analysts by bringing conformity in operation
- Standard operation procedures are simpler to write
- Operational support over the internet



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## Intelligent by nature

The OPTIC 3 has been developed for integration into automatic GCs for 24/7 operation. This innovative system offers no less than 7 programming modes adding versatility to any GC. The crucial sample introduction never needs to be compromised, allowing sensitive or complex mixtures to be handled with confidence.

Techniques such as thermal desorption, large volume and off-line sampling can be applied as easily as the traditional on-column, split and splitless injection methods. 7 Injection modes:

- Split
- Splitless
- DTD
- DMI
- RLVI
- At-Column (large volume injection)
- Expert mode

## Software control

The newly designed, highly innovative software expands the dimensions of injection technology. Based on years of experience and development it extends features and optimises the analytical output. Therefore, the EVOLUTION WORKSTATION offers state of the art GC analysis in a very user-friendly way. Integrated Internet technology secures support and software updates at any time at any location.

- RS 232 interface and LAN connection
- Windows 98/2000/NT compatible
- Complete status information at any moment during standby or method run
- Log file
- Easy method definition and method development
- Offers method parameter optimisation sequence
- Built-in AT Column calculator for most used solvents
- Thermocouple located inside GC for real constant flow control
- Real time data collection for temperature and flow on screen



## Nature's finest

The Maas and the Rhine are two of the major rivers that cross the Netherlands and have shaped the contours of the country and determined its natural habitat. So it is not surprising that the Kingfisher feels at home in this delta. An environment in which this brightly coloured bird fishes out exactly what it is looking for, with incredible precision...

# Versatile by nature

## Cryo Trap

Optionally available with the OPTIC 3 is the integrated Cryo Trap, using cold N<sub>2</sub> gas. Cryo Trap boosts in a very safe way speed, cost effectiveness and flexibility of the analytical process. Especially for low volatiles components.

- Operating using cold N<sub>2</sub> gas
- Temperature range -150° C to 400° C
- Heating ramp up to 15° C / sec
- Fast cooling
- Integrated within the OPTIC 3 (and as a stand alone application for the OPTIC 2 and others)
- Fast splitless transfer
- Compatible with any GC



Cryo Trap ATAS GL.

## FOCUS

FOCUS is a highly versatile system, designed to process samples for routine GC and GC mass spectrometry analyses. Sample preparation procedures, including liquid-liquid extraction and derivatization, can be selected, programmed and fully automated to meet specific analytical requirements. Located above the GC, the robotic sample processor requires no additional bench space.

It is based on a robotic XYZ arm with motorised syringe and comprises separate vial trays for samples and solvents/reagents. LVI syringe wash station, a heatable sample agitator for mixing, headspace and SPME. Simple and reproducible application robot.

### FOCUS facilities

- Liquid sampling
- Solvent, reagent and standard additions
- Derivatization
- Liquid-liquid solvent extraction that can be combined with Rapid Large Volume Injection (RLVI)
- Large volume injection, combined and operated as appropriate
- Automated extraction of relatively small sample volumes possible while retaining trace detection limits
- Difficult Matrix Introduction (DMI)
- DTD Sample tube/liner exchange

# Sensitive by nature

## Solid Samples: DTD

Direct Thermal Desorption (DTD) which thermally desorbs samples directly onto the head of the capillary column for GC analysis is widely used in the collection and injection of samples. DTD can be employed to determine compounds in gases, air, liquids or even solid samples. Thus, analyses are transferred very efficiently for high-resolution chromatography and, being a simpler process, it is faster to set up and requires little optimisation.

**The innovative DTD solution places tubes in the OPTIC 3 injector directly on top of the column. Therefore:**

- No transfer line
- No cold spots
- No cold valves

Conclusion: no losses in the analytical process

### The DTD automated Thermal Desorber

- 98 up to 294 sample tube capacity
- For active, labile and high MW compounds
- Solids as well as absorbed samples
- Compatible with any GCs or GC-MS
- Flexible
- Pyrolysis

### Applications

- Preservatives in wood
- Nicotine in tobacco
- Car exhausts
- Spores and poles
- CTME analysis
- Characterisation of polymers
- Pesticides in food
- Semi-volatile terosoles

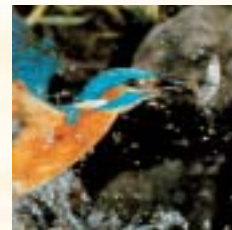


Fully automated injection proces.



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# Applications



## Online Solid Phase Extraction

The Online Solid Phase Extraction has been developed for the water industry to measure trace organics in drinking water and environmental samples. In principle, Online SPE can be applied to any analysis that is currently performed by the combination of solid phase extraction (SPE) and GC-MS.

**As characteristics of the samples in difficult matrices vary, optimisation of methodologies will be necessary using the wide range of operating controls that ATAS GL provides.**

### SPE

The OPTIC 3 combined with a capillary GC-MS in combination with SPE results in a powerful online system for 24/7 operation gas chromatography:

- Clean-up and enrichment of trace organic components
- Lower levels of detection
- Contamination-free system
- Small sample volumes
- Great reduction of extraction times
- Reduction of transport and handling costs

With SPE based on large volume injection (RLVI) or AT column, ATAS GL offers the highest sensitivity with a minimised sample volume and a lower amount of solvent used. Therefore, not only the environment but also the financial department will benefit: solvents are as polluting as they are expensive.

### SPME

SPME (Solid Phase Micro Extraction) adds simplicity and speed to the analytical process. The Optic 3 increases precision with a ramp rate of 1000° C/min and a fixed starting point. The result is great improvement of RSD figures. Cold injection temperature and fast heating are the benefits.

### DMI

DMI (Difficult Matrix Injection) places a vial or cup with the liner directly on top of the column. With

a solvent monitor the solvent can be vented away and the analysis will start. After closing the split line and heating the injector very low concentrations of the analytes are determined. This technique, in combination with a time-of-flight mass spectrometer is the perfect solution for fast screening of samples for contamination.

### EPA 8270

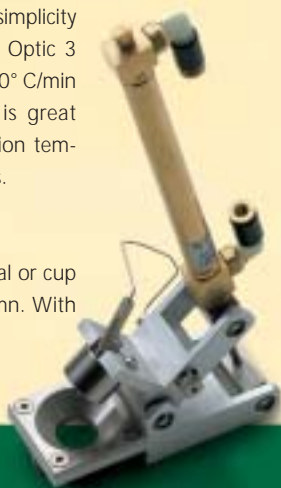
The 8270 Injector System has been developed to meet the stringent requirements of US EPA Method 8270 for the analysis of semi-volatiles by GC and GC-MS. The system, which includes all the necessary hardware and software, automates the injection of large volumes of sample extracts into the GC analyser and provides major analytical advantages.

### At-Column large volume injection

Large volume injection significantly reduces the high cost of sample preparation. It is estimated at 65%, of the total GC time for the analysis of semi-volatiles.

### Analysis advantages

- Increasing the sensitivity achieved by the GC or GC-MS
- Reducing the volume of the original sample
- Greatly reducing solvent extraction costs
- Elimination of concentration steps
- Guaranteed Method 8270 performance
- Rugged reliable automated performance
- Reproducible quantitative results
- Compatible with all GC-MS systems
- Flexible for methods development
- Automatic optimisation sequence
- Intelligent software



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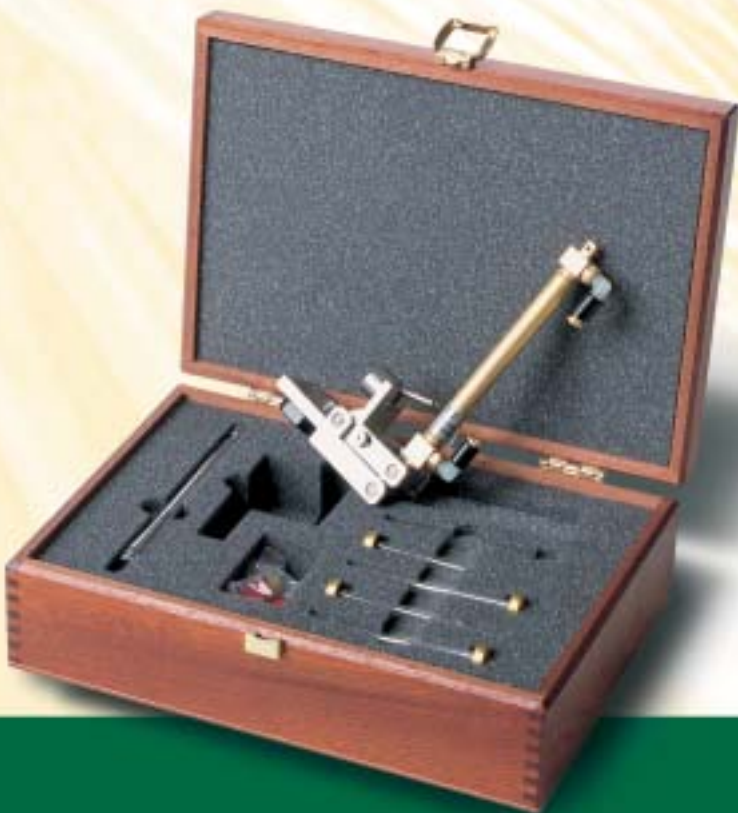
## Gas Samples

The OPTIC Air Sampling System has been developed for the automated in situ determination of airborne C2-C6 and C5-C10 volatile organic compounds (VOCs) by GC. The system can be readily interfaced to most GCs. The system is rugged and can be transported in a mobile laboratory for on site monitoring of urban and rural environments. As such, OPTIC 3 is the ideal analytical tool for the measurement of organic atmospheric pollutants in environmental studies to improve air quality.

### The OPTIC Air Sampling System

- Rapid, high resolution analysis
- In situ determinations, saving time and consumables
- Continuous, unattended monitoring
- Reproducible, quantitative results
- Compatible with most GCs
- Enables detection down to ppt levels

For further technical specifications, visit our website: [www.atasgl.com](http://www.atasgl.com)





## Mission Statement

Precision and efficiency. Providing easily retrofittable accessories to GC and GC-MS users has always been second nature to us. We enable users to improve the quality of the analytical data they produce and at the same time significantly reduce the cost per analysis. ATAS GL therefore focuses on simplifying and automating analytical procedures to significantly reduce the need for manual processing of any samples.