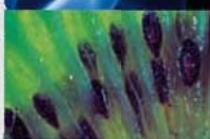
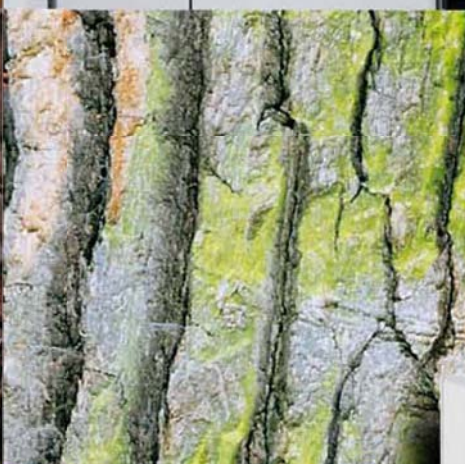
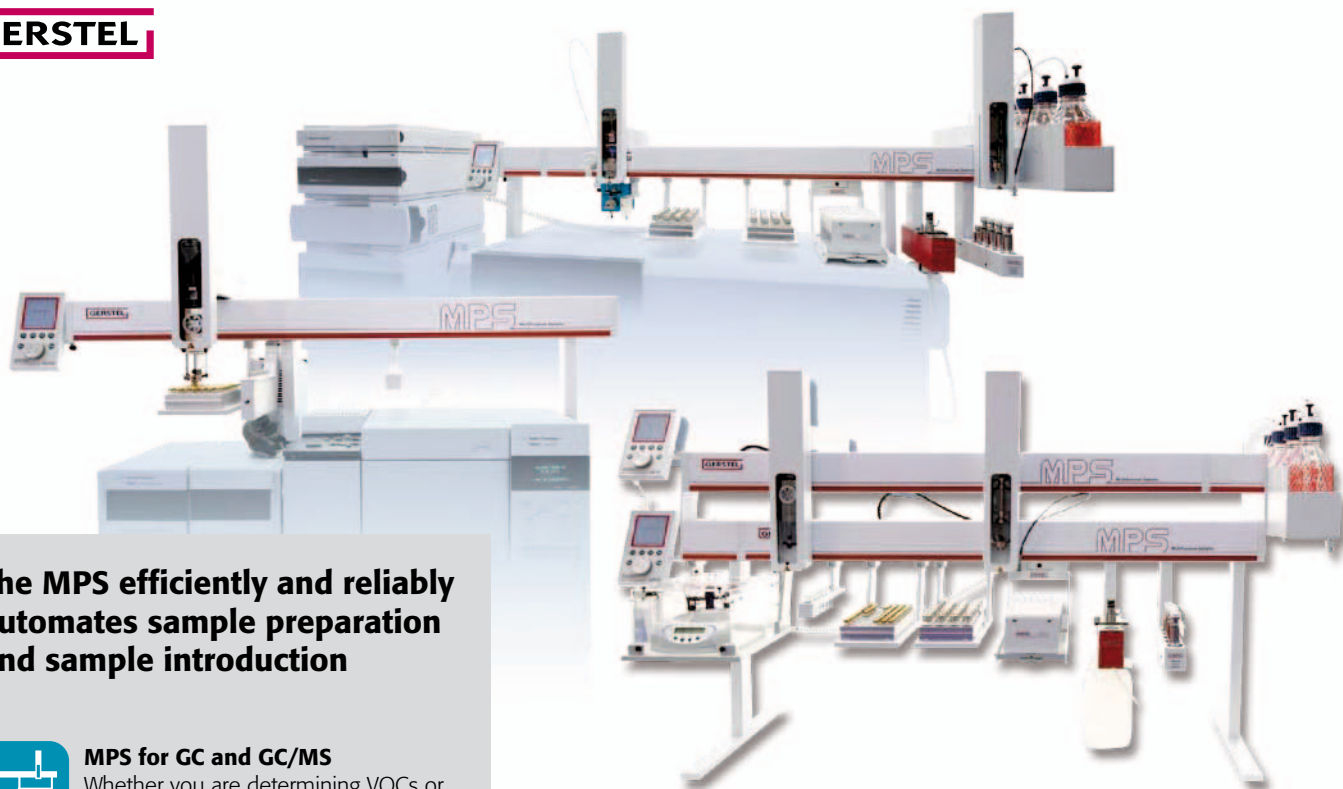




GERSTEL MultiPurpose Sampler

MPS Versatile autosampler and sample preparation robot





The MPS efficiently and reliably automates sample preparation and sample introduction



MPS for GC and GC/MS

Whether you are determining VOCs or SVOCs, the MPS sets the benchmark for efficiency, throughput and improved limits of detection. In the simplest possible way, the MPS enables you to automate your sample preparation and improve the performance of your GC/MS analysis.

More on page 4.



MPS for LC and LC/MS

For routine analysis or R&D projects: Removing unwanted matrix material; concentrating analytes; or adding standards, reagents or diluents. All this can be combined with automated sample introduction to the LC/MS. Every task is performed and every challenge met in the easiest possible way. More on page 6.



MPS WorkStation

The stand-alone MPS WorkStation operates independent of the analysis instrumentation enabling it to prepare samples for multiple analysis techniques. The modular concept of the MPS makes it easy to change to other sample preparation methods enabling you to react quickly and flexibly to changes in lab requirements. More on page 8.



MAESTRO Software

Methods, trays and injectors are quickly and easily picked by mouse-click from pull down menus. Sample preparation and analysis runs are easily and efficiently set up and optimized to run simultaneously for maximum productivity and throughput. Urgent samples can be added to the running sequence at almost every point in time – all thanks to MAESTRO software.

More on page 10.

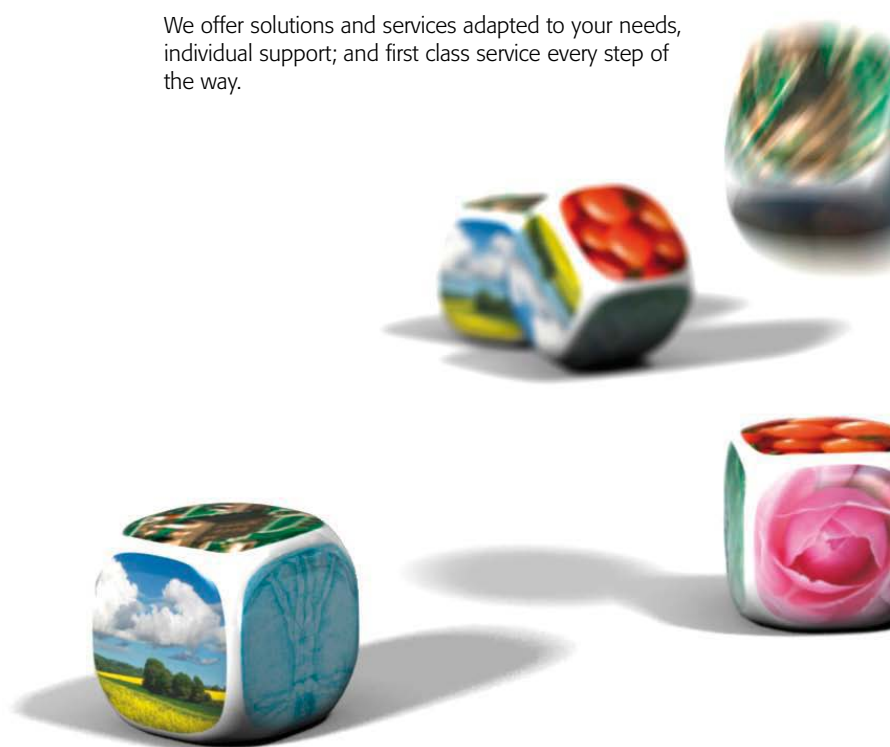
Unique solutions for automated sample preparation

Analytical laboratories in all branches of science and industry throughout the world use our products for a wide range of interesting applications.

These include:

- Flavor and fragrance**
- Automotive**
- Semiconductor and Electronics**
- Forensic science and criminology**
- Food**
- Pharmaceutical**
- Chemicals and polymers**
- Environmental**

We offer solutions and services adapted to your needs, individual support; and first class service every step of the way.



The most versatile autosampler and sample preparation robot for the analytical lab:

GERSTEL MultiPurpose Sampler MPS

Modern laboratory processes frequently offer significant potential for improvement in the fields of sample preparation and sample introduction. Improving productivity and performance while cutting per sample cost is realistic provided you have chosen an autosampler that rises to the task and can be adapted to meet new challenges as demands change. The GERSTEL MultiPurpose Sampler MPS enables highly efficient automation of sample preparation and sample introduction for GC/MS and LC/MS. Or you can use the MPS as WorkStation independent of the analysis systems, providing prepared samples for multiple techniques in the lab. Whichever MPS you choose, you are sure to get reliable results and increased throughput combined with the flexibility to adapt effortlessly to changes and new challenges.



MPS benefits:

Highest productivity, maximum throughput

- Complete automation of every step from sample preparation to GC/MS- or LC/MS-analysis
- Optimal system utilization: Intelligent, multi-sample parallel processing of sample preparation and analysis (PrepAhead)
- Routine operation combined with full flexibility: Priority samples can be inserted into the running sequence for analysis after the current run has been finalized
- Simple operation through integrated control of every step from sample preparation and sample introduction to GC/MS or LC/MS analysis

Rugged, reliable, and traceable operation:

- All system parameters and deviations are logged for full traceability
- Rugged and reliable: The MPS has proven its worth in thousands of R&D and production laboratories world-wide
- Ensured productivity: Immediate status reports by e-mail enable the operator to take action in case the system has been stopped unexpectedly.
- Always informed: User-defined real-time display of system parameters and sequence progress

Maximum flexibility

- Multi-method sequences enable flexible operation and efficient method development
- Modular system: The MPS can be configured to perform multiple sample preparation techniques. Additional techniques are quickly added for easy adaptation to new analytical tasks
- Dual syringe system: The MPS can be configured with two syringes enabling flexible automated sample preparation and –introduction with just one integrated system

Simple, intuitive, and reliable operation

- Easy selection, set-up and editing of sample preparation steps in the MAESTRO software. Each task is selected by mouse-click from a drop-down menu, no macro-programming is needed
- One integrated sequence table and – depending on the system – one integrated method operate the complete system including GC/MS or LC/MS
- Improved workplace environment thanks to minimized risk of contact with potentially toxic solvents

MPS



GERSTEL Dynamic Headspace (DHS) in combination with a GC/MS system enables efficient trace level determination of volatiles in solids or liquids.

The MPS efficiently and reliably automates sample preparation and sample introduction for

GC- & GC/MS analysis

Liquid injection

Standard-, sandwich-, or large volume injection up to 1000 µL: The MPS performs liquid sample introduction in a highly reliable and efficient manner. Rugged and reproducible analysis without carry-over or analyte discrimination is at your finger tips.



Thermal extraction of liquids and solids

In combination with the GERSTEL Thermal Desorption Unit (TDU), the MPS performs automated thermal extraction of liquid and solid samples in disposable µ-vials. The µ-vials and the involatile matrix residue are removed and discarded following the analysis, keeping the GC/MS system clean and stable.



Headspace GC (sample volume max. 100 mL)

MPS also means maximum productivity: The PrepAhead function of the MAESTRO software enables simultaneous thermostating and analysis of multiple samples for optimal productivity and best utilization of your GC/MS system. The syringe is heated and purged with clean carrier gas to prevent carry-over.



Dynamic Headspace (DHS)

DHS offers significantly improved limits of detection compared with static headspace analysis. The headspace above a solid, viscous or liquid sample is purged with inert gas and analytes transferred to, and concentrated on, a replaceable adsorbent trap. The process is fully automated, including trap desorption in the GERSTEL Thermal Desorption Unit (TDU) and GC/MS analysis.



SPME & Multi-Fiber Exchange (MFX)

The MPS completely automates SPME analysis including fiber conditioning, sample extraction, fiber desorption, and fiber exchange. Derivatization can be performed on the fiber or reagents added to the sample prior to extraction.

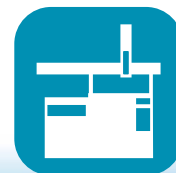


Pyrolysis

In combination with the TDU and the PYRO option, the MPS performs automated pyrolysis of liquid and solid samples.

A separate thermal desorption step can be performed on the sample prior to pyrolysis in order to determine and/or remove volatile analytes. In this way, cleaner pyrograms and more information is obtained.





Optimized overlapping multi-sample thermostating and GC/MS analysis results in highly efficient and productive Headspace analysis.

Liquid Sample Preparation

The MPS in combination with MAESTRO sample preparation functions enables easy and efficient automation of all liquid handling steps for sample preparation. Among other techniques, the MPS enables:

- Derivatization and addition of internal standards
- Dilution and extraction
- Heating, cooling and mixing
- Centrifugation and weighing
- Reading and processing barcode information
- Filtration
- Evaporative concentration (^mVAP)



Efficient trace analysis with the GERSTEL Twister™

In combination with the TDU, the MPS performs fully automated thermal desorption of up to 196 Twisters for ultra-trace determination of organic compounds in aqueous and gaseous samples. Quantitative transfer of the analytes to the GC/MS system enables extraordinarily low limits of detection.



Automated Solid Phase Extraction (SPE)

The GERSTEL SPE system is based on the MPS, enabling automated SPE based on standard dimension cartridges. The eluate can be concentrated through controlled evaporation and a keeper solvent introduced to eliminate analyte loss and enable optimal separation. SPE methods are easily and intuitively set up in MAESTRO allowing easy transfer of established manual methods to the MPS.



Dispersive Solid Phase Extraction (DPX)

Unlike the classical SPE process, Disposable Pipette Extraction (DPX) is based on loosely contained sorbent material in disposable pipette tips. Due to the efficient interaction, extraction is accelerated dramatically compared with traditional SPE methods, while requiring much less solvent.



Automated Liner EXchange (ALEX)

In combination with the Automated Liner EXchange (ALEX) option, the MPS can automatically replace GC inlet liners. In this way, ALEX provides cleaner chromatograms and correct analysis results even when analyzing matrix laden samples such as QuEChERS extracts.



GC-MS/MS system with GERSTEL Automated Liner EXchange ALEX

MPS

The right sample container for every application

The MPS can process a variety of different sample vial types meeting almost every need. Sample trays can be heated or cooled or stored in drawers to avoid exposure to light. Several thousand samples can be stored in the smallest possible space.



Micro- and deepwell plates

Micro- and deepwell plates used in combination with stacked sample drawers enable a throughput capacity of several thousand samples per batch.



Standard vials used for sample preparation and -introduction

The MPS can process samples in crimp cap or screw cap vials of the following sizes: 0.7 mL; 1 mL; 2 mL; 10 mL and 20 mL. Metal- or polymer-based caps are available.



Highly flexible headspace analysis

The MPS headspace option is based on standard 10- and 20 mL headspace vials. In addition, sample trays and agitators are available for vial sizes from 2 to 100 mL.



Processing of clinical samples

The MPS can process blood samples directly from Monovettes® or Vacutainers®, minimizing the risk of contamination for both operator and sample. The optional bar code reader enables unequivocal control and traceability of sample ID.



Thermostated sample trays

Samples can be stored at sub-ambient temperature to eliminate analyte decomposition or at elevated temperature to enable sampling of viscous liquids.

Customized trays

GERSTEL offers customized sample trays enabling you to work with the sample containers that meet your needs. Please contact us to learn more about how we can help ease your workload.





The MPS efficiently and reliably automates sample preparation and sample introduction for

LC- & LC/MS Analysis

Thanks to its reliability, flexibility, and outsize capacity to hold and process samples, the MPS is the perfect autosampler for LC/MS analysis. Samples can be introduced from any standard size vial and from micro-well or deep-well plates as well. When using stacks, up to several thousand samples can be placed on the sampler under controlled conditions, cooled or heated as needed for best sample stability.



Zero carry-over LC/MS sample introduction

The MPS option Dynamic Load and Wash (DLW) reduces carry-over in your LC/MS Analysis to an absolute minimum. This novel and innovative technology eliminates all contact between sample and syringe and all surfaces in the sample flow path are inert. System rinse is performed from above in the sample introduction direction. The fast Inject-wash-cycles make DLW the perfect start for fast ultra-trace analysis.



Automated Solid Phase Extraction (SPE)

The SPE option upgrades your MPS to a fully automated SPE robot. The SPE process is performed in a highly reproducible and reliable manner: Positive liquid displacement eliminates variations in recovery even when sample variability leads to changes in flow restriction across the cartridge. A new cartridge is used for every sample eliminating cross-contamination. The standard dimension 1, 3, and 6 mL cartridges used ensure that established manual methods are easily transferred to the MPS and automated. Following SPE, the eluate can be introduced directly to the LC/MS system or processed further. SPE setup is performed reliably and intuitively in the MAESTRO software.



The GERSTEL SPE also performs:

- SPE cartridge drying for complete solvent change
- Evaporative concentration of the eluate, if needed an LC- or GC compatible keeper solvent can be added
- Additional liquid sample preparation steps

Fast and efficient Dispersive SPE (DPX)

The MPS performs automated Disposable Pipette Extraction (DPX), a dispersive SPE technique based on loosely contained sorbent in disposable pipette tips. The sample and sorbent undergo efficient turbulent mixing resulting in an ultra-fast solid phase extraction with high recovery even for complex samples such as blood or urine. The required sample and solvent volumes are much smaller than with standard SPE processes, making DPX both cheaper and more environmentally friendly. The intuitively operated MAESTRO software makes it easy to set up your method or sequence whether the MPS is operated as stand-alone WorkStation or integrated with the LC/MS system. Even if additional sample preparation steps are needed, such as eluate concentration or the addition of internal standards, it's done with the click of a mouse.



Liquid Sample Preparation

The MPS in combination with MAESTRO sample preparation functions enables easy and efficient automation of all liquid handling steps for sample preparation. Among other techniques, the MPS enables:

- Derivatization and addition of internal standards
- Dilution and extraction
- Heating, cooling and mixing of the sample and other liquids
- Centrifugation and weighing
- Reading and processing barcode information
- Filtration
- Evaporative concentration (ⁱⁿVAP)



MPS

Maximize your possibilities

For GC (GC/MS), LC (LC/MS) or standalone operation the MPS Dual Head version and the MPS DualRail PrepStation maximize your analytical possibilities. The additional tower enables the simultaneous use of two different syringes. Sample preparation steps are performed in a controlled and highly accurate and reproducible manner for best possible results. Every step is selected by mouse-click from a pull-down menu in the GERSTEL MAESTRO software and added to the overall GC/MS or LC/MS method.

The MPS PrepStation offers:

- Adding standards or derivatizing agents to SPME or headspace samples without manual intervention
- Automated Disposable Pipette Extraction DPX followed by LC (LC/MS) or GC (GC/MS) injection
- LC injection and fraction collection



MPS Dual Head for automated dispersive SPE (DPX) and sample introduction to an HPLC system.



MPS Dual Head for automated SPE and sample introduction to GC/MS

Let your analysis and sample preparation productivity take off!
The flexible and multi-functional

MPS Workstation



The GERSTEL MultiPurpose Sampler (MPS) provides a wide range of capabilities in one robotic system. The MPS WorkStation is a bench-top stand-alone version of the MPS, independent of the GC/MS or LC/MS analysis system. The WorkStation can be configured with one or two towers enabling it to perform a range of functions to meet almost every requirement in terms of performance and throughput. The MPS WorkStation provides complete flexibility. In combination with the GERSTEL MAESTRO software, the MPS WorkStation offers simple set-up and advanced automation capabilities.

Automated Solid Phase Extraction (SPE)

The SPE option upgrades your MPS to a fully automated SPE robot. The SPE process is performed in a highly reproducible and reliable manner:

- Positive liquid displacement eliminates variations in recovery even when sample variability leads to changes in flow restriction across the cartridge.
- A new cartridge is used for every sample eliminating cross-contamination.
- The standard dimension 1, 3, and 6 mL cartridges used ensure that established manual methods are easily transferred to the MPS and automated.
- Following SPE, the eluate can be introduced directly to the LC/MS system or processed further.
- SPE setup is performed reliably and intuitively in the MAESTRO software.



The GERSTEL SPE also performs:

- SPE cartridge drying for complete solvent change
- Evaporative concentration of the eluate, with or without adding keeper solvent
- Additional liquid sample preparation steps



MPS Dual Head WorkStation with SPE and centrifuge for automated clean-up of QuEChERS extracts

Fast and efficient Dispersive SPE (DPX)

The MPS performs automated Disposable Pipette Extraction (DPX), a dispersive SPE technique based on loosely contained sorbent in disposable pipette tips. The sample and sorbent undergo efficient turbulent mixing resulting in ultra-fast solid phase extraction with high recovery even for complex samples such as blood or urine. The required sample and solvent volumes are much smaller than those used for standard SPE processes, making DPX less expensive and more environmentally friendly. The intuitively operated MAESTRO software makes it easy to set up your method or sequence whether the MPS is operated as stand-alone WorkStation or integrated with the LC/MS system. Even if additional sample preparation steps are needed, such as eluate concentration or the addition of internal standards, it's done with the click of a mouse.



Liquid Sample Preparation

The MPS in combination with MAESTRO sample preparation functions enables easy and efficient automation of all liquid handling steps for sample preparation. Among other techniques, the MPS enables:

- Dilution and extraction
- Centrifugation and weighing
- Derivatization and addition of internal standards
- Heating, cooling and mixing of the sample and other liquids
- Reading and processing barcode information
- Filtration

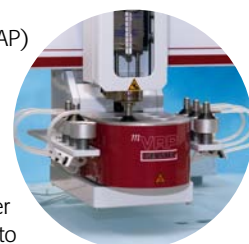


Solvent Evaporation

The Multi-Position Evaporation Station (mVAP) option performs solvent evaporation and sample concentration for lower detection limits as well as solvent exchange for improved chromatography and LC/MS ionization.

Up to 196 samples in standard autosampler vials can be concentrated in batches of up to six.

Concentration is performed at user defined temperature, agitation and vacuum levels enabling highly flexible operation under mild temperature conditions with limited analyte loss.



Centrifugation

Whether for clean-up of QuEChERS extracts, for processing of blood samples, or for general removal of unwanted sample matrix: Centrifugation is an important step in many sample preparation processes. The MPS enables full automation of the centrifugation step in the sample preparation process under easy and efficient MAESTRO software control. Depending on your application needs, different types and sizes of centrifuges are available.



MPS













Efficient, intuitive and convenient
Sample Preparation:

GERSTEL MAESTRO Software

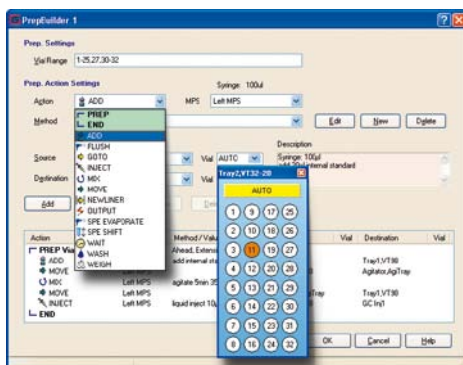
MAESTRO provides a comprehensive and efficient solution for the modern laboratory. All GERSTEL modules and systems are operated in a simple, efficient and transparent manner in stand-alone mode or integrated with the GC/MS or LC/MS software. Just one sequence table and, depending on the system, one integrated method run the complete system from sample preparation and sample introduction to GC/MS or LC/MS analysis.

MAESTRO is designed for simple and efficient laboratory operation – day in and day out.



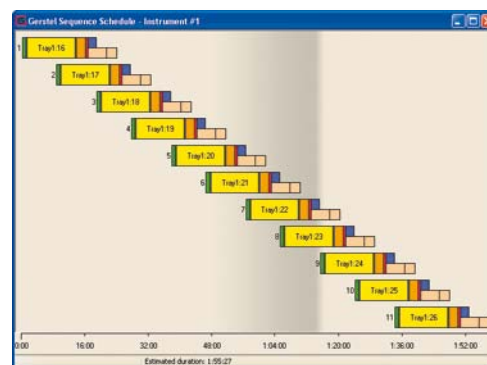
-  **Add Standard**
Derivatize
-  **Transfer sample**
-  **Wash**
-  **Dilute**
- Extraction**
-  **Heat, cool, agitate**
Condition
-  **Liner Exchange**
-  **Weigh**
- SPE**
-  **DPX**
Filtration
-  **Evaporate**
-  **Introduce**
-  **Centrifuge**
-  **Barcode**

Type	Method	Tray
1	Blank	MPS-HS-OVP26.M
2	Calibration	MPS-HS-OVP26.M
3	Sample	MPS-HS-OVP26.M
4	Sample	MPS-HS-OVP26.M
5	Sample	MPS-HS-OVP26.M
6	Sample	MPS-HS-OVP26.M
7	Sample	MPS-HS-OVP26.M



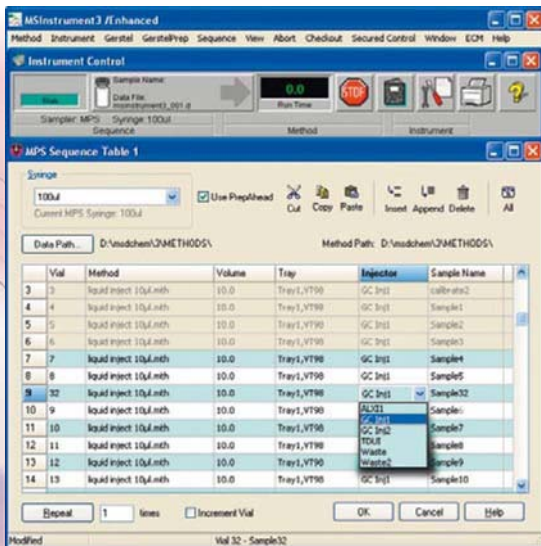
Sample preparation by mouse-click

MAESTRO offers easy and intuitive control of the MPS. All steps from sample preparation to introduction to your GC/MS or LC/MS system are selected by mouse-click from a drop-down menu. Context-sensitive on-line help is always at your finger-tips in case a question comes up.



Scheduler

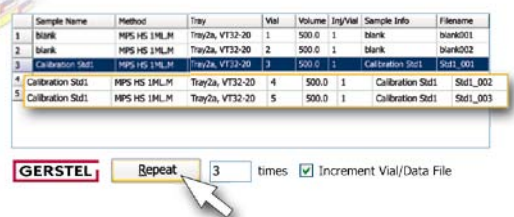
The MAESTRO Scheduler gives you a clear overview of the sequence run time and the duration of each step over the entire process from sample preparation to GC/MS or LC/MS analysis. The Scheduler displays how various steps are performed simultaneously for maximum efficiency. The effect of each method change on the total analysis time is instantly shown. This makes it easy to optimize your method for highest productivity and throughput.



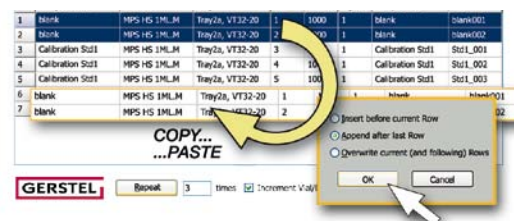
Priority samples can be added to a running sequence at any point. Methods, trays and inlets are selected from pull-down menus. Only sequences that can be completed by the current instrument configuration are accepted eliminating time-consuming errors and ensuring best possible transparency and productivity.

Intelligent sequence editor

The sequence editor has intelligent fill-down functions that let you generate new sequences easily and quickly. Very little effort is required to create the sequence table that runs your daily samples.



Generate a new sequence with just one click of the mouse: The chosen row is copied the specified number of times. Using the "Increment Vial/Datafile" function, the vial position number and data file number are automatically incremented, no need to edit the individual lines.



Copy and paste function: Simply point and click, the destination is clearly marked, it couldn't be easier.

MAESTRO benefits

Software for all GERSTEL Modules and -Systems

- Unified and reliable control of all GERSTEL modules for GC/MS and LC/MS
- One PC controls up to four systems
- Stand-alone operation with any analysis system
- Fully integrated operation with Agilent ChemStation or GC MassHunter: Intuitive and error-free operation of the complete analysis system using one method and one sequence table
- Integrated sequence table for Agilent LC MassHunter, AB SCIEX Analyst® and Thermo Scientific® Xcalibur™

Simple and intuitive operation

- Context sensitive on-line help and parameter info enable fast method generation and short learning curve
- Time saving sample preparation by mouse-click for highest efficiency. Prep steps are selected from a drop-down menu in the PrepBuilder and are easily edited. No need for macro programming

Highest productivity

- Optimized system utilization through intelligent PrepAhead sample processing. Chromatography and sample preparation are perfectly synchronized and performed in parallel
- The Scheduler clearly shows you the timing of every step as well as the total run time for the batch enabling easier laboratory work-flow planning

Unique flexibility

- Priority samples can be added at any time without stopping the on-going sequence
- Real-time display of instrument parameters provides at-a-glance reassurance that the ongoing analysis is progressing as planned. The display can be configured to the needs of the analyst

Reliable operation and results you can rely on

- For highest reliability and confidence in the results, MAESTRO monitors maintenance intervals and reminds the analyst to replace consumable items in a timely manner
- The log file and service log file register all system parameters for full traceability of all steps in the process
- A notification is immediately e-mailed to specified recipients if there is an unplanned interruption in the analysis sequence, enabling the analyst to take corrective action to ensure that results are generated on time

Highly productive automated sample preparation and sample introduction for GC/MS and LC/MS

GERSTEL MultiPurpose Sampler MPS

• Proven and reliable technology

The GERSTEL MPS has proven its worth in industry, contract laboratories, public safety departments, and in academia world-wide. The MPS provides highly efficient automated sample preparation and sample introduction for GC/MS and LC/MS.

• Best possible productivity

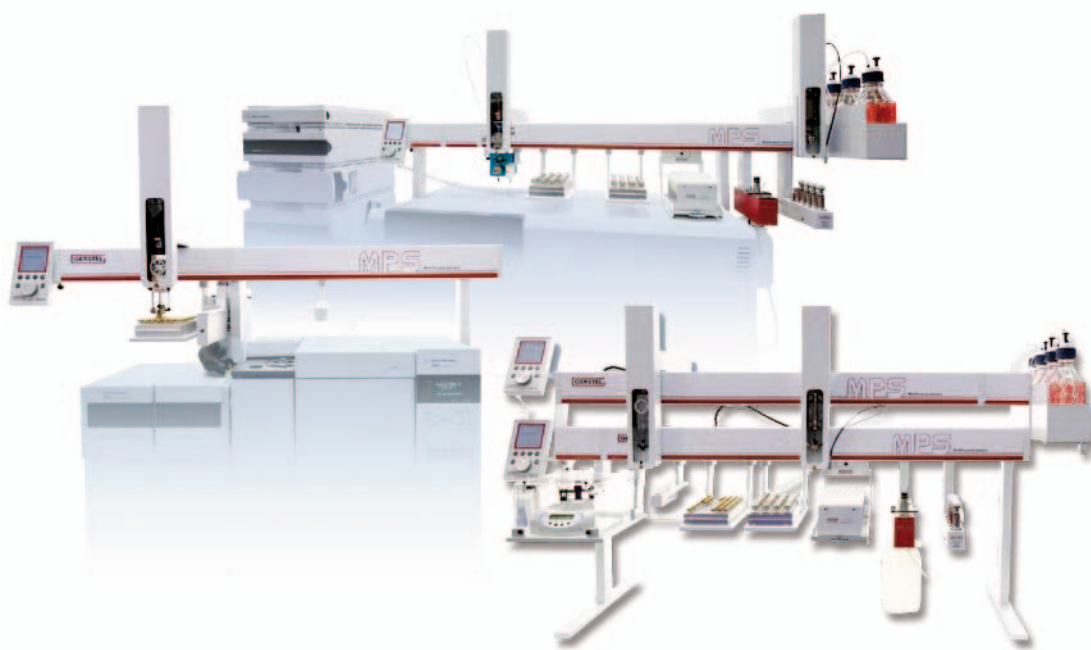
Thanks to intelligent synchronization, sample preparation and chromatography are performed in parallel. Whenever your analysis system is ready, the next sample has been prepared and is ready to be injected. This ensures that your analysis system is never idle, always utilized to its full capacity for best possible productivity and return on investment.

• Intuitive operation

The GERSTEL MAESTRO software lets you operate your MPS by mouse-click whether it is operated independently or integrated with the analysis system. MAESTRO operates fully integrated with the Agilent ChemStation or GC MassHunter. One method and one sequence table control the complete system from sample preparation to GC/MS or LC/MS analysis. MAESTRO operates integrated with the sequence tables of Agilent LC MassHunter, AB SCIEX Analyst® and Thermo Scientific® Xcalibur™.

• Maximum flexibility

The MPS lets you automate a wide range of standard or special sample preparation technologies. The MPS is easily and quickly adapted to the task at hand.



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Awarded for the active pursuit of environmental sustainability

