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Robotic System for Automated Sample Preparation: FREESTYLE

FREESTYLE XANA

FREESTYLE XANA

FREESTYLE

Automated Sample Preparation for Water Analysis

Sample preparation of large-volume water samples



XANA applies the pressure - up to 4 bar when loading onto SPE columns

In [water analysis](#) large-volume or particulate-laden samples often have to

be handled. The robotic system FREESTYLE XANA has been specifically developed for sample preparation of large-volume water samples, for example of drinking water, raw water or river water.

With a positive pressure of up to 4 bar during loading, samples with suspended matter in many cases can also be pushed through the SPE columns. Without the need for supervision, the system processes samples reliably over 24 hours and 7 days / week through all stages beginning with the raw sample up to filling into GC vials.



FREESTYLE XANA consists of:

- FREESTYLE BASIC
- SPE module
- EVAporation module (optional)
- A movable platform for the sample rack and the external processing station; on rolls for easy to handle operation
- a complete bench with an additional platform for the FREESTYLE and hang-in side parts (optional)

Equipped with the [EVAporation module](#) the sample can be eluted directly into the EVAporation chamber and transferred into a GC vial after the concentration, ready for subsequent analysis.

Moreover, each module can be used separately: the [SPE module](#) for applications operated via [Solid Phase Extraction \(SPE\)](#), the [EVAporation module](#) for the concentration of organic solvents or both modules combined for applications in which the SPE column is directly online eluted into the EVAporation chamber for concentration.

High Sample Throughput due to Parallelisation

65 samples in 24 hours!



FREESTYLE XANA for automated sample preparation in water analysis

1. The gripper of the **SPE module** transports the SPE columns to the required position on the FREESTYLE platform and executes the elution steps.
2. In the processing station on the FREESTYLE platform are 3 SPE columns simultaneously being processed in two blocks: in Block 1 the 3 columns are being conditioned, loaded and washed whereas in the subsequent Block 2 the previous 3 columns are being dried in parallel.
3. The external processing station is the control centre of the water module including the mechanics for pumping up to 10 L samples, valves and sensors for process monitoring.
4. Sample rack with 24 positions for 1 L sample containers each; optional 3 sample containers with up to 10 L volume each can be connected with the system.
5. Flexible, easy hanging of racks for SPE columns and elution containers on the FREESTYLE platform.
6. Optional: **EVaporation module** for precise concentration to a continuously adjustable end volume of 5.0 mL to 0.2 mL; direct elution from the SPE column into the EVaporation chamber.

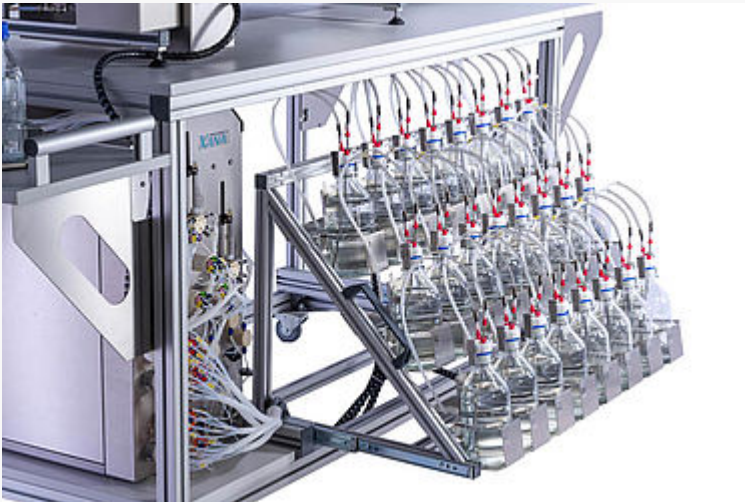
Working Principle of FREESTYLE XANA

The required processing time of 3 samples is determined by the block with the longest lasting process step.

A high sample throughput of 65 samples per day is achieved by parallelisation of the individual process steps and simultaneous processing of 3 samples.

Sample volume of up to 10 L

Depending on requirements sample volumes up to 10 L can be loaded onto the column.



Extendible sample rack for up to 24 x 1 L sample bottles



Specially designed closure for one-hand operation

LCTech provides for the water samples a sample rack with space for 24 x 1 L sample bottles that can also be filled with 250 mL or 500 mL sample volume. Alternatively 3 containers with up to 10 L sample volume can be used.

The sample rack is extendible, for easy movement and sample loading.

Sample bottles are placed into the rack slightly tilted and together with a specially designed sample bottle closure, which affects the suction capillary to be positioned at an angle, the sample load is maximised.

A separate rinsing capillary placed through the closure enables the rinsing of the sample bottle.

Approved FREESTYLE software

All FREESTYLE modules are pre-configured and can be operated via the FREESTYLE software.

Each module includes a method editor backed with a default method. The user can, however, simply modify this by input of various processing parameters and save it as a new method. Alternatively, an already validated, manual method can be created as a new method and saved. Combinations of existing methods, as e.g. SPE-EVA, are also possible.

Thus, the software provides the flexibility to change from a water application to another SPE application with a smaller sample volume by just a few mouse clicks.

During sample input in the main window of the water module, the samples are positioned in the specially installed sample rack by mouse click.

The software checks immediately, whether the sample positions, according to the selected method, have already been allocated. It is possible to add new samples at all times during processing and to prioritise recently entered samples - even at ongoing operation. A prioritised sample will be automatically started after the current sample has been finished.



Screen method input



Screen sample input

Technical specifications

- Developed for unattended 24/7 operation
- 24 samples are loaded in groups of 3 for sequential throughput
- Use of 3 mL and 6 mL SPE columns made of polypropylene with MACHEREY-NAGEL closures
- Liquid and pressure tight up to 4 bar
- Free adjustable flow rates of 1 - 30 mL/min
- Drying with pre-set nitrogen pressure
- Up to 8 solvents selectable for conditioning and washing
- Dimensions:
without pull-out side parts: 1.60 m x 2.12 m x 0.8 m (W x H x D)
with pull-out side parts: 2.40 m x 2.12 m x 0.8 m (W x H x D)

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Brochure

[FREESTYLE XANA \(pdf | 1 MB \)](#)

[FREESTYLE general \(pdf | 3 MB \)](#)

FREESTYLE videos

[Automated clean-up for water samples](#)

Application notes

[Fully automated sample preparation for the Analysis of acidic pesticides and drug residues in potable and surface water \(pdf | 1 MB \)](#)

[Automated detection of selected explosives and related compounds in water \(pdf | 932 KB \)](#)

[Automated detection of artificial sweeteners \(pdf | 1,014 KB \)](#)

Press release

[New and unique: Automated sample preparation for water analysis \(pdf | 226 KB \)](#)

Water analysis

[All about sample preparation for water analysis](#)

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