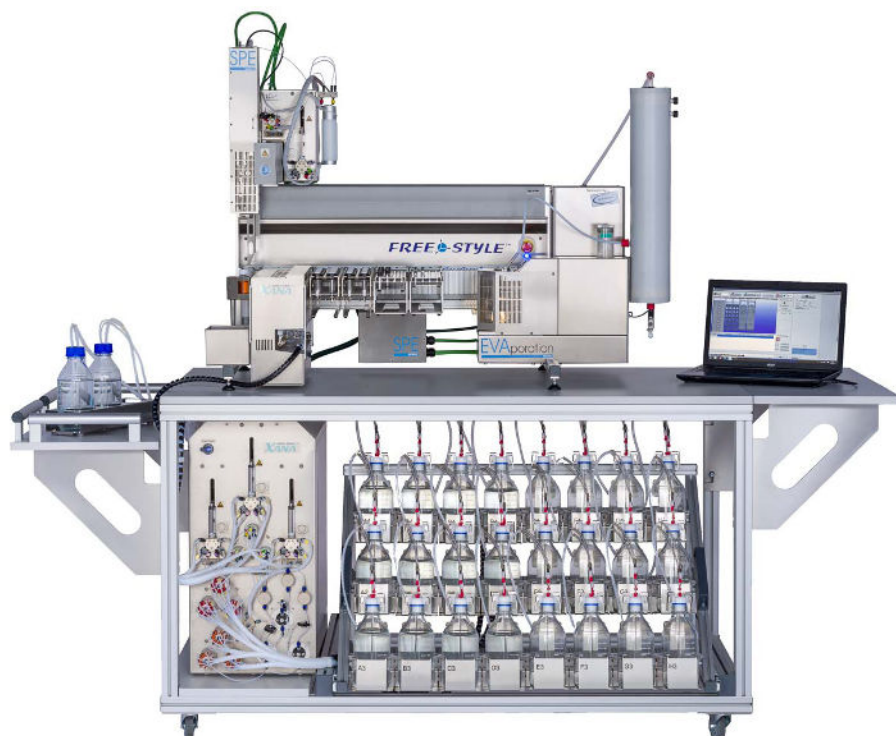


**GERSTEL**

MAKING LABS WORK



## Automated Sample Preparation for Water Analysis

*Complete Automation of EPA Method 537.1 for PFAS Compounds*

**FREESTYLE-XANA™**

# FREESTYLE XANA for PFAS Determination

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For analysts that need to automate the SPE method for the determination of PFAS compounds in drinking water following the updated EPA method 537.1, the FREESTYLE XANA is the only system available that offers complete automation of the entire SPE clean up process. Unlike other platforms that require manual intervention steps and struggle with high blank values, low recoveries and limited sample throughput, the FREESTYLE XANA platform provides reliable 24/7 operation and meets all performance standards of the method.

When paired with the high throughput D-EVA system, the required evaporation step can be performed in multiple Falcon™ tubes simultaneously. Using vacuum, infrared heating and centrifugal force, the D-EVA system provides extremely precise control of evaporation conditions without analyte loss. Sample can be brought to dryness or to a user defined final volume, and due to the elimination of “bumping” and aerosol generation, the sample can be directly transferred to a HPLC-vial without the need to rinse the Falcon tube.

## Key FREESTYLE XANA - D-EVA Features

- Complete automation of SPE clean up and evaporation steps
- No fluoroplastic containing parts
- Clean blanks and no carry over
- Reliable 24/7 operation
- Parallel sample processing for high sample throughput up to 30 samples per batch
- 250 mL plastic sample bottles with automatic required methanol rinse
- Advanced automated sample evaporation to user defined set volume
- High tolerance for water in eluate
- Direct sample transfer to HPLC-vial, no tube rinsing needed
- Advanced software for easy method set up and system control
- Applicable to all EPA PFAS methods (537.1, 533, and 1633)

# PFAS Determination Workflow



Load 250 mL sample plastic sample bottle onto FREESTYLE XANA system gripper



Perform automated sample SPE clean-up and concentration



Simultaneously concentrate up to 22 samples to dryness using D-EVA



Directly transfer sample to LC-MS/MS for analysis

## EPA Method 537.1 Workflow Summary

- 250 mL water sample spiked with surrogates is passed through a SPE cartridge packed with styrenedivinyl benzene (SDVB)
- After sample is loaded, bottle is rinsed with methanol and rinsate is also passed through the SPE cartridge
- Eluate is concentrated to dryness
- Dried sample dissolved in 1 mL of 96.4% (vol/vol) methanol: water
- Internal standards are added
- 10 µL of sample is injected into an LC-MS/MS system using a C18 column for separation

# FREESTYLE Xana

## Main Hardware Components

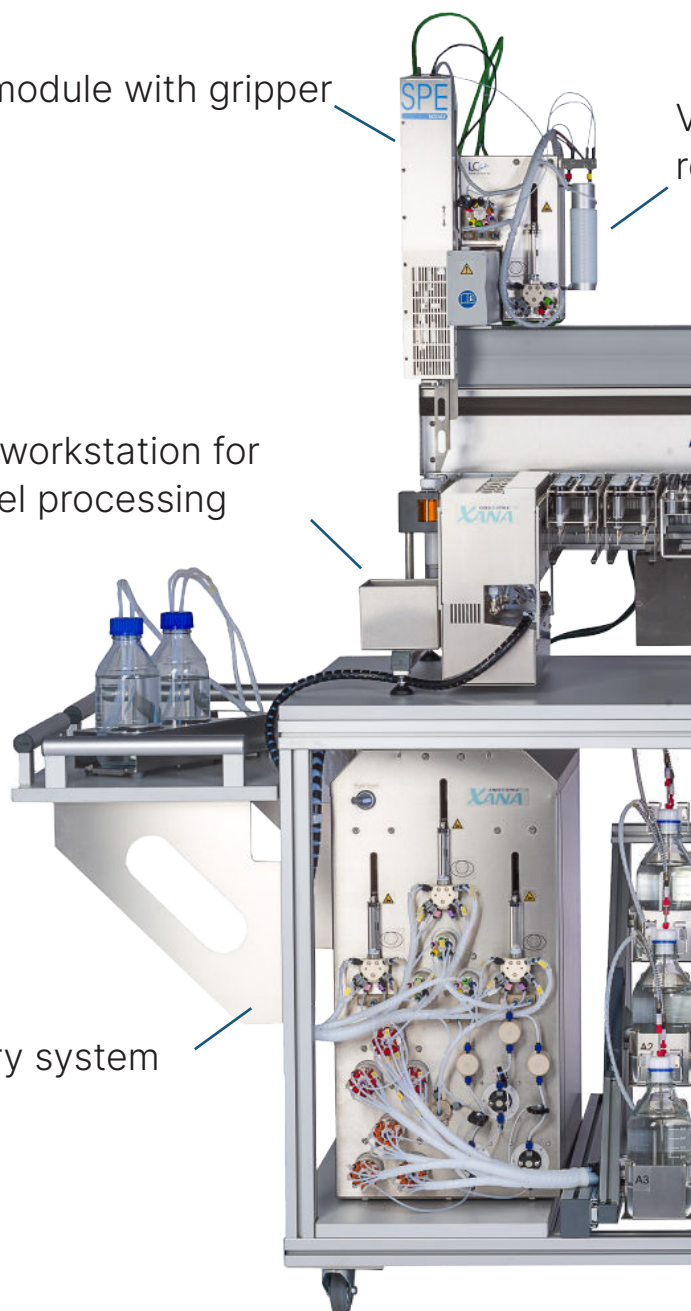
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- **SPE module with gripper**  
Performs all functions needed for SPE clean-up
- **XANA workstation**  
Allows simultaneous sample processing for higher throughput
- **Solvent delivery system**  
Advanced flow control with process monitoring
- **FREESTYLE basic platform**  
Flexible upgrade path through addition of numerous sample preparation modules and sample racks
- **FREESTYLE XANA table**  
Included custom table for optimum use of solvent delivery system and sample rack  
Bench top version also available
- **FREESTYLE XANA sample bottle rack**  
Unique design allows for

SPE module with gripper

Xana workstation for parallel processing

Solvent delivery system



Valve and syringe pump location  
reduces dead volume

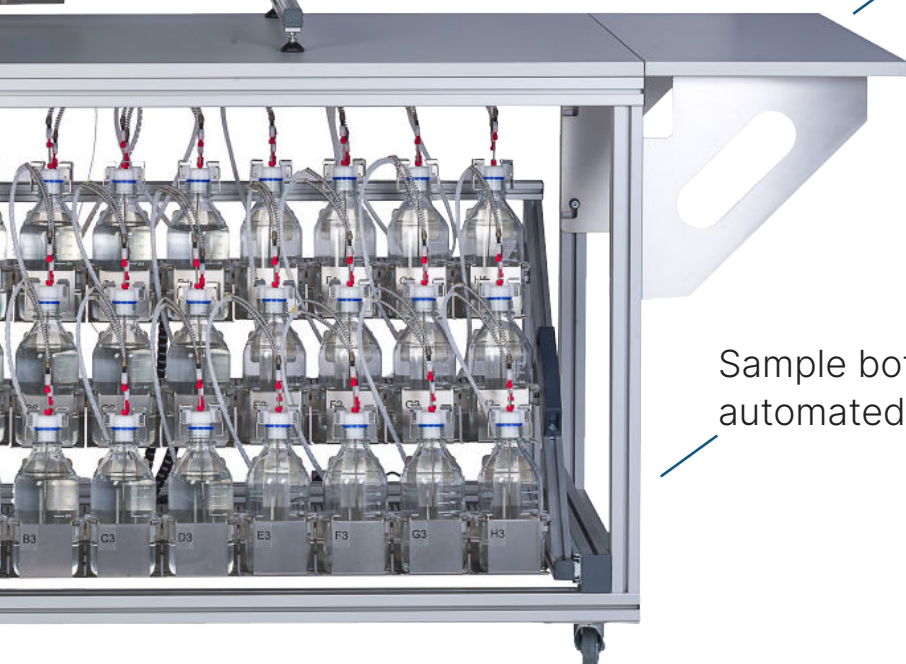


FREESTYLE Basic Platform

Table top version also available



FREESTYLE Xana table



Sample bottle rack with  
automated bottle rinse

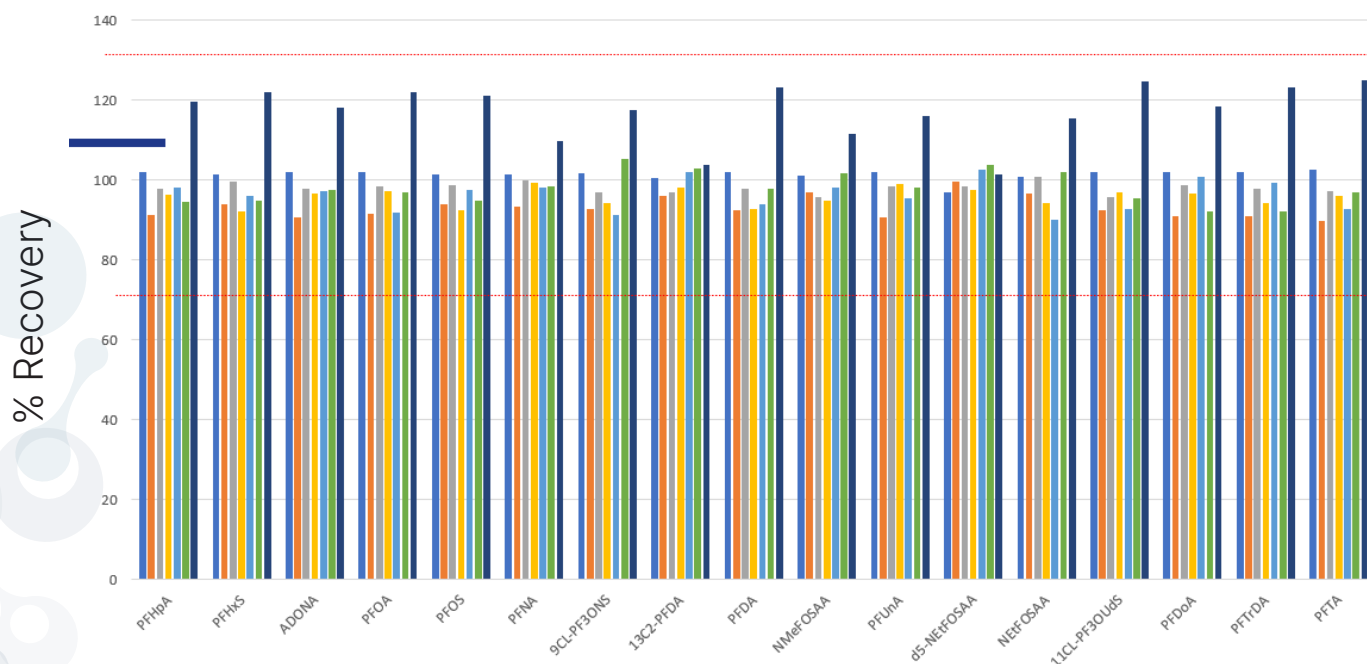


# LCTech D-EVA

## D-EVA for EPA Method 537.1



- Gentle, accelerated evaporation using infrared heat, vacuum and centrifugal force
- Simultaneous evaporation of up to 22 × 15 mL or 11 × 50 mL Falcon tubes
- Sample can be evaporated to dryness or to user define final volume
- Elimination of “bumping” and aerosol formation during evaporation eliminates the need for tube rinsing when transferring sample to HPLC vial
- No loss of analytes or carry over
- All relevant parameters (vacuum pressure, rotor temperature, final volume, etc.) are programmable
- Up to 16 custom methods can be stored



Recovery of SPE Processed Calibration Standards

Concentration Range 0.08 to 20 ng/L, recoveries must be between 70-130%

# FREESTYLE Software

LC Tech FREESTYLE C:\FreeStyle\Sessions\2022\_06\_21\062122\_robustness test.sls

Sequence Options Help

Method **WAT** Arrange Racks Add New Sample Edit Item START Quit ? LC Tech

**SPE WATER** Ring-Ø 32 mm SPE\_3 2x6 Ring-Ø 32 mm 14047 0050ml x 3 x 10 Type 1 50

**Status of Sampler**  
Init OK  
**PLC Status**  
Status: **OK, SPE INIT**  
**USB-Com.**

**EVA Evaporation Unit**  
Actual Set  
Water Temp.: 37 °C 35 °C  
Cone Temp.: 35 °C 35 °C  
Vacuum: 1008 mbar 500 mbar  
☒ Heat Control ☐ Vacuum Control  
Evaporation process is: **OFF**

IN	Status	Number	Name	Method	Code	Status	In.Time	Proc.Time
2	OK	10220	Sample	EPA_PFAS_Test_01.wat	2022	OK - waiting	5:04:43 PM 6/21/2022	
3	OK	10221	Sample	EPA_PFAS_Test_01.wat	2022	OK - waiting	5:04:53 PM 6/21/2022	
4	OK	10222	Sample	EPA_PFAS_Test_01.wat	2022	OK - waiting	5:05:00 PM 6/21/2022	
5	OK	10223	Sample	EPA_PFAS_Test_01.wat	2022	OK - waiting	5:05:05 PM 6/21/2022	
6	OK	10224	Sample	EPA_PFAS_Test_01.wat	2022	OK - waiting	5:05:09 PM 6/21/2022	
7	OK	10225	Sample	EPA_PFAS_Test_01.wat	2022	OK - waiting	5:05:13 PM 6/21/2022	
8	OK	10226	Sample	EPA_PFAS_Test_01.wat	2022	OK - waiting	5:05:20 PM 6/21/2022	

Total items in list: 13 , ready for process: 13

**Actually Processing:**  
Report  
Delete All Samples  
Reset Sample Status

**Log File**  
10230-> Sample added: 5:05:46 PM 6/21/2022  
10231-> Sample added: 5:08:11 PM 6/21/2022  
sequence Terminated: 2:31:56 PM 6/22/2022  
sequence loaded: 2:28:37 PM 1/16/2023

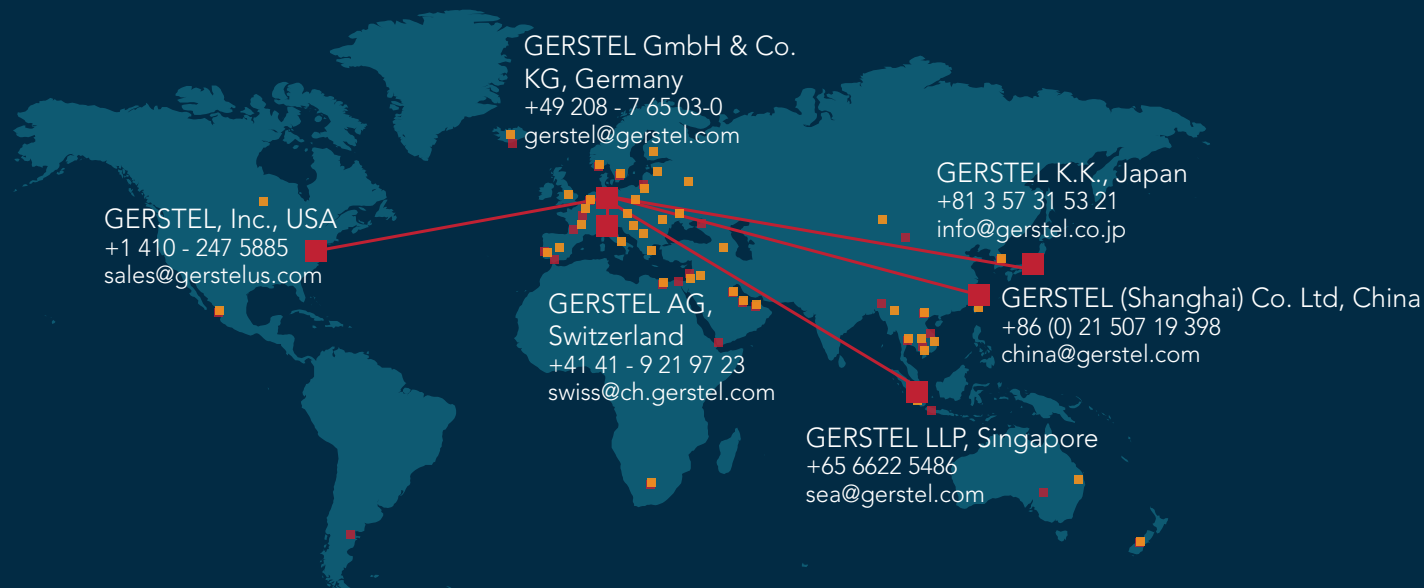
**XANA**  
Xana cleaning cycle  
Status: Connected to: COM5

AUX COM-Port -40  
Start/Stop Rec

- Controls all FREESTYLE functions and modules
- Easy to use, intuitive graphical user interface
- Simple and fast transfer of manual method parameters
- “Non-Stop” protocol ensures uninterrupted operation

# GERSTEL Worldwide Regions

GERSTEL is an international company with offices all over the world including Germany, USA, Singapore, Japan, and China. Contact a member of our team who serves your region.



*GERSTEL, Inc. is the US distributor for LCTech*

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