

LISSY®

Automation Platform for QuEChERS



As its name suggests, the QuEChERS method (Quick, Easy, Cheap, Effective, Rugged, and Safe) has caused a breakthrough in pesticide residue analysis in the food sector. The QuEChERS method can be taken to a further level with the fully automated liquid handling platform “LISSY” from Zinsser Analytic. LISSY automates all the required steps for sample analysis – weighing in the sample, the precise and reproducible addition and mixing of solvents and reagents, and centrifugation if required. LISSY therefore provides a rapid and error free automated solution for the analysis of pesticide residues in samples using QuEChERS.

- Precise Liquid Handling
- Precise and Reproducible Powder Dosage
- Efficient Mixing
- Integrated Centrifuge
- Optional pH-measurement and Adjustment
- Optional Purification by SPE



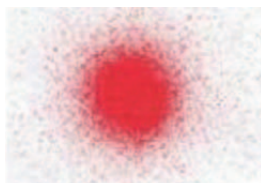
Probes with variable Spacing



Disposable Tips



Different probes for different tasks



Spraying



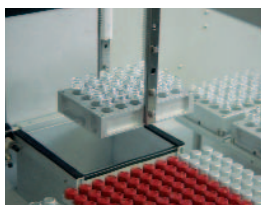
Thorough Washing



Precision syringe pumps



Exchangable workbenches for different applications



Integrated Gripper arm

Unique Probes

The system can be equipped with up to 4 probes with variable spacing between the probes (min: 8mm, max: 38mm) Individual volumes can be set for each pipetting channel.

Each pipetting channel can have its own individual probe which allows a combination of applications possible in a single run:

- Single and multi channel probes for adding liquids simultaneously or working under inert conditions
- Piercing probes to work with septa sealed containers to avoid evaporation of samples or protect from the air
- Filtration probes for filtration from the top, removing liquid from solid particles
- Conductive disposable tips (10,50, 300 & 1100µl) for contamination free pipetting
- Temperature-controlled probes for pipetting, e.g. saturated solutions
- specially coated or fully ceramic probes for handling corrosive reagents and for ion-free dispensing
- Slurry probes for dispensing of PEG solutions, glycerol, glues and oils for example
- Spotting probes for dispensing precise droplets
- Spray probes to wash remaining samples off the walls or for paint or sample preparation of biological samples

Precision Dispensing

Our standard syringe pump for volumes from 1µl to 5ml has a compact construction and travelling length of 30mm, when combined with a high resolution of 2000 steps, this ensures excellent precision. The manufacturing materials are chosen carefully for solvent resistance and reliability and the syringe delivers 10% of the volume with a 1% precision. For volumes over 5ml special pumps are available.

Flexible Labware

Besides a wide range of racks and carriers which are available as standard, the workbench can accommodate up your own racks. You can specify with your order the types of racks you want to use or have special racks designed for your application.

Space Saving Workbench

Our workbenches come as standard in 900mm, 1200mm (XL) and 2000mm (XXL) length. To make the most efficient use of space exchangeable workbenches are used for different applications and can be easily switched between runs.

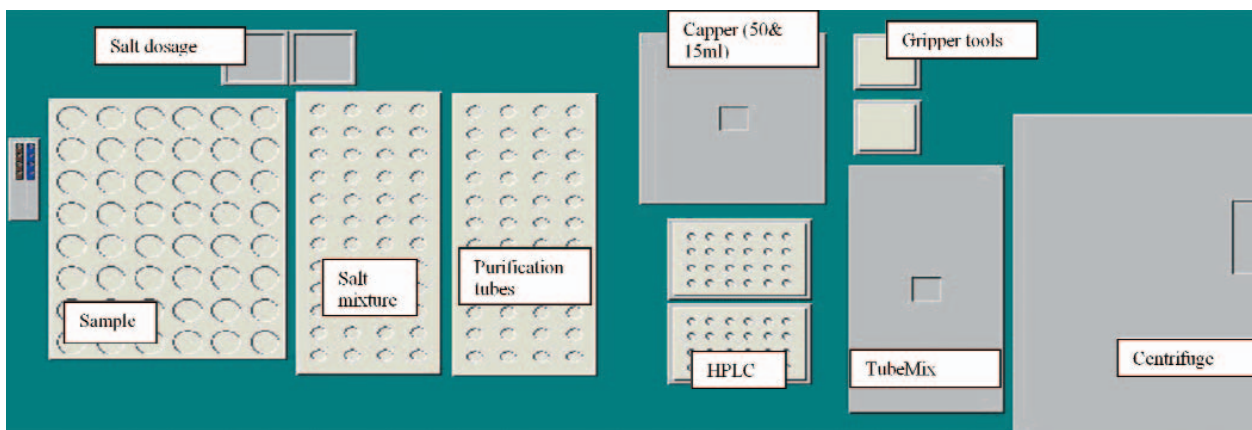
The PTFE solvent resistant 6 way valve allows 6 system liquids to be used which are stored away from the workbench. Stackers allow stacking of plates which saves valuable space and increases the throughput of the system.

Gripper arm

LISSY is equipped with an integrated handler for picking up and placing of plates, racks and tools (e.g. temperature probes, pH-probes, etc.).

Sample Tracking

High resolution CCD barcode reading including 2D barcode reading of plates and tubes (also Micronic and Matrix tubes), allows you to track and store information relating to your samples.



The system is build to your requirements

An example of a workflow:

Weighing in the Sample

The vials are manually filled and then placed in a rack on the workbench.

Addition of 10ml Acetonitrile and the ISTD solution

Acetonitrile and the internal standard are added as system liquids with the pipetting probes. The storage bottles are stored off the workbench in their original containers.



Visual Documentation

Mixing

For through mixing the single tube vortexer TubeMix is used. It has a speed of 2,200 rpm.



Addition of salt mixture

Addition of salt mixture

The salt mixtures have either been manually prepared in tubes or automatically prepared using REDI Super. The salt mixtures are carefully added to the samples using REDI Super.

Mixing

For extraction with the salt mixture, the sample is vortexed thoroughly on the integrated TubeMix.



Centrifugation

Centrifugation

For the centrifugation step, the centrifuge is placed beneath the workbench and is automatically loaded by the gripper arm. It carefully places the tubes into the centrifuge racks. The centrifuge is automatically started by the WinLISSY software.

Taking an aliquot to the purification tube

After the centrifugation step, an aliquot is taken and transferred to a purification tube which is stored in a rack on the workbench.



Sampling & Transferring of aliquot

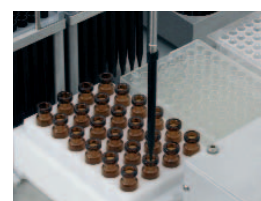
Further Mixing

Centrifugation

The sample is then again placed into the centrifuge for a final centrifugation step.

Transfer to HPLC Vials for GC/LC/MS

Finally the sample is transferred to HPLC vials for GC/LC/MS. Alternatively the sample can be directly injected into the analysis system.



Transfer to HPLC Vials

Options:

Sample Purification

In addition to using Zinsser Analytic's patented filtration probes, samples can also be filtered using filter cartridges or plates on an integrated vacuum manifold. Samples can also be purified using solid phase extraction through appropriate sorbents in column or plate format using the same hardware on the system.

Each step, as well as the final filtration or solid phase extraction, can be achieved using vacuum or controlled positive pressure. The process is totally automated as the system can place the elution vials into the manifold or remove them for sampling.

pH-Adjustment and Measurement

The pH value can be measured using our pick-up probe on the workbench. Not only can our software store this information but the acid or base can be automatically added to achieve the required pH.

Capping and De-Capping

Screw necked vials can be automatically capped and de-capped with cap storage provided on the workbench. This is the ideal tool to minimise the exposure of highly reactive reagents.

Serum necked vials (Ø 8mm, 11mm, 13mm & 20mm) can also be crimped using our crimping tool which is stored on the workbench and picked up and offered to the vials when required. The system can also place the stopper and crimp cap onto the vials prior to crimping.

And much more ...

LISSY can be equipped with vortexers, sonicators, hotplates, cooling plates, stirrers, weighing stations, filtration modules or other modules from our extensive range of tools.

Dimensions

900 x 710 x 550 mm (WxDxH)	-	work area 720 x 290mm
1200 x 710 x 550 mm (WxDxH) optional	-	work area 1000 x 290mm
2000 x 710 x 550 mm (WxDxH) optional	-	work area 1800 x 290mm

Options

- Disposable Tips
- Viscous Media Dispensing
- Large Volume Pumps
- Barcode Reading
- Plate Stackers
- Custom-made Racks
- Temperature-controlled Stations
- Integrated Balance
- Vortexers
- Magnetic Stirrer
- pH-Measurement & Adjustment
- Integrated Camera
- Evaporators