Automated Sample Preparation for NMR and LCMS Analysis

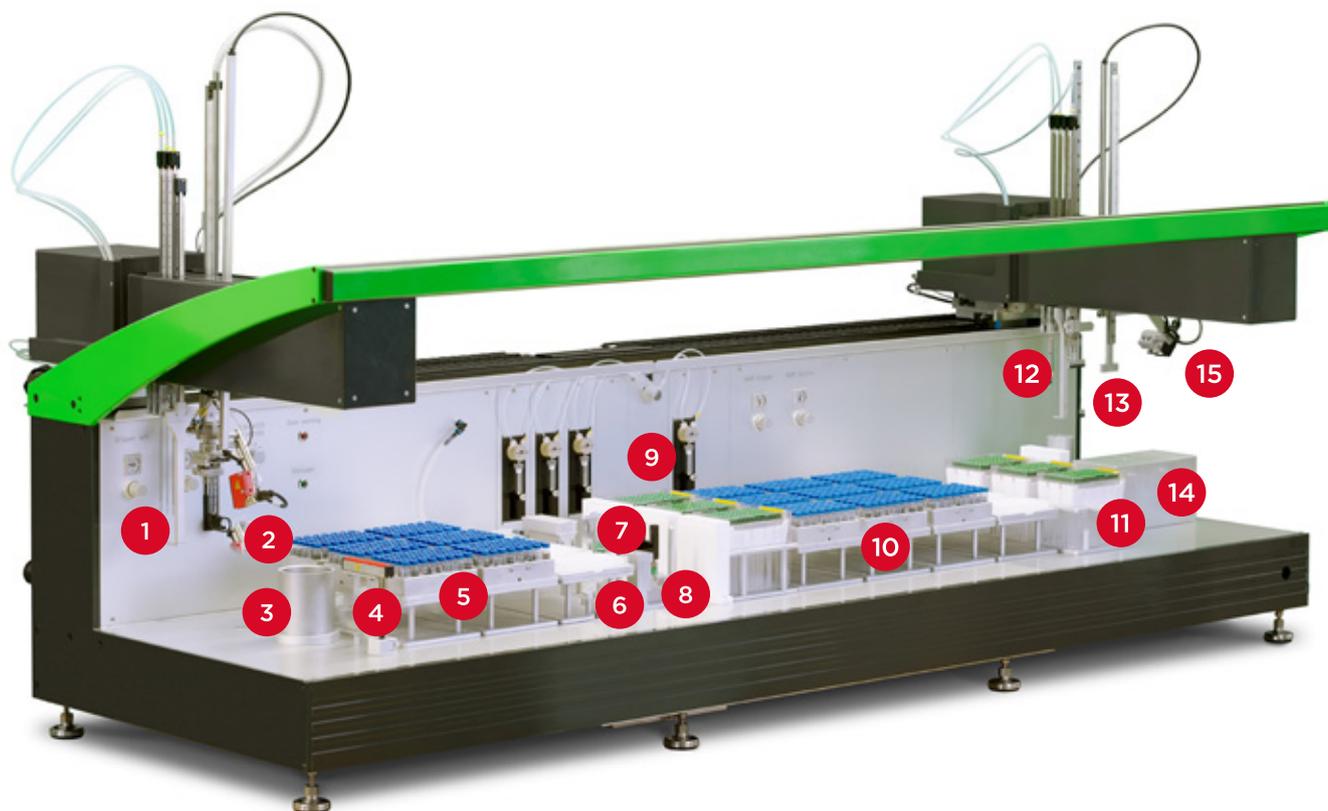Speed up your analysis with our automated NMR and LCMS sample preparation solution.

Designed for your processes

Zinsser Analytic's passion is to create automated solutions addressing your workflow challenges. A major pharmaceutical company approached us, leading to the development of an automated sample preparation solution for NMR and LCMS analysis.

- ✔ High Throughput of Preparation of Samples
- ✔ High Dosage Precision
- ✔ Reliable Results
- ✔ Customized Software Interface
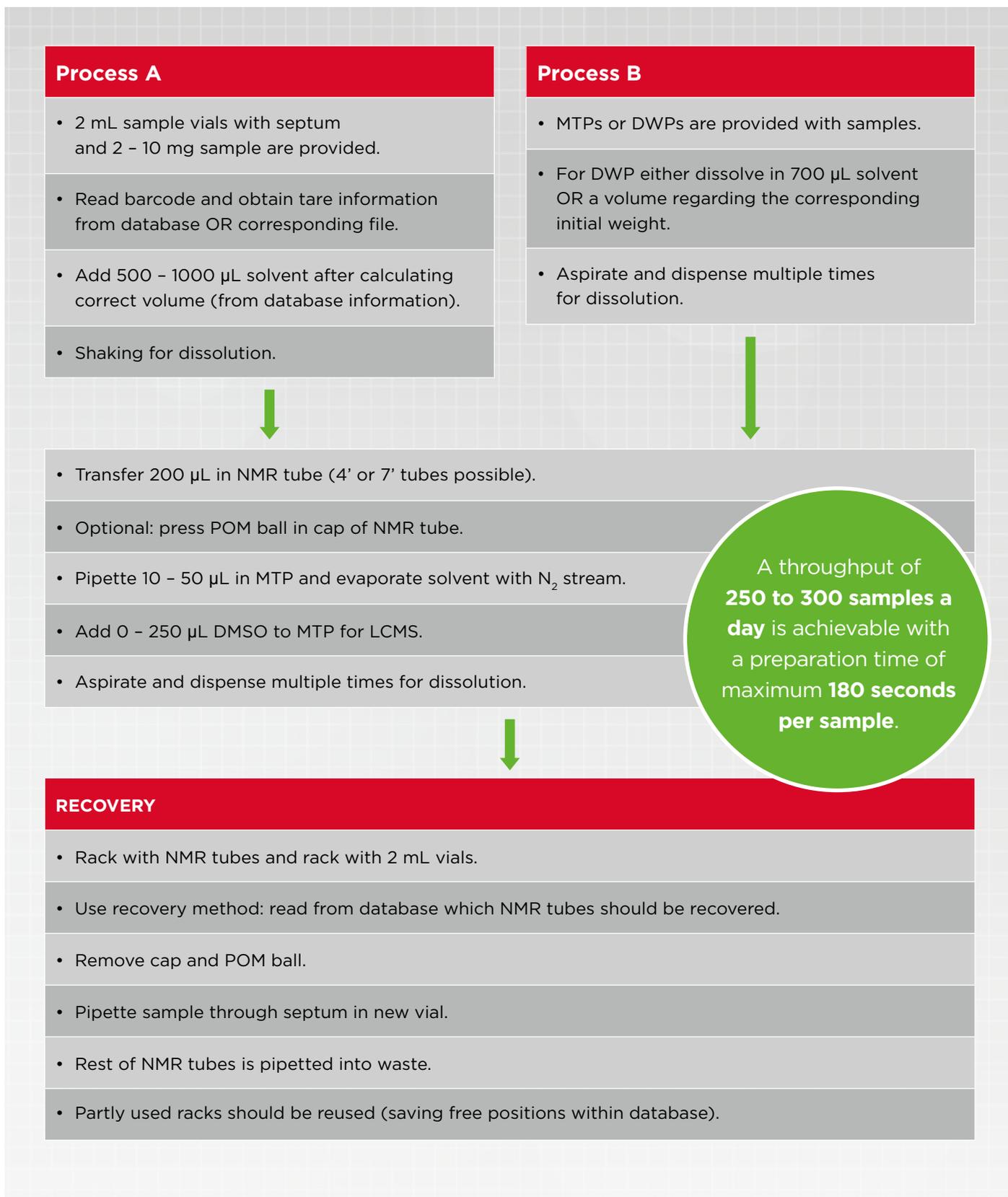- ✔ Improved Reproducibility

HARDWARE DESIGN

1	Customized tips with holding down clamp for NMR tubes.
2	2D Barcode reader for vials with 270° rotation.
3	Balance with housing.
4	Ioniser.
5	Source racks: Either 2 mL input vials and screw caps with septum OR deepwell plates.
6	Microtiter plates for LCMS analysis.
7	Evaporation manifold.
8	Adjustment station for positioning check of tips.
9	Precision syringe pumps.
10	NMR tube racks, 2 mL HPLC vial racks with caps and septum and microtiter plates for recovery of desired samples after analysis.
11	NMR tube racks with caps and POM balls for recovery or disposal after analysis.
12	POM ball adapter for setting of POM balls and customized tip with holding down clamp for NMR tubes.
13	Gripper for racks.
14	NMR cap with POM ball removal station.
15	2D Barcode reader for racks.

PERFORM DIFFERENT PROCESSES

Different processes of sample preparation from 2 mL input vials, microtiter plates (MTP) or deepwell plates (DWP) can be completed with this system; three different solvents can be used at the same time for sample preparation. A restart option within every process step is included, which can begin the process anew starting from the aborted step.

Following processes were customized:

Process A

- 2 mL sample vials with septum and 2 – 10 mg sample are provided.

- Read barcode and obtain tare information from database OR corresponding file.

- Add 500 – 1000 μL solvent after calculating correct volume (from database information).

- Shaking for dissolution.

Process B

- MTPs or DWPs are provided with samples.

- For DWP either dissolve in 700 μL solvent OR a volume regarding the corresponding initial weight.

- Aspirate and dispense multiple times for dissolution.

- Transfer 200 μL in NMR tube (4' or 7' tubes possible).

- Optional: press POM ball in cap of NMR tube.

- Pipette 10 – 50 μL in MTP and evaporate solvent with N_2 stream.

- Add 0 – 250 μL DMSO to MTP for LCMS.

- Aspirate and dispense multiple times for dissolution.

A throughput of **250 to 300 samples a day** is achievable with a preparation time of maximum **180 seconds per sample**.

RECOVERY

- Rack with NMR tubes and rack with 2 mL vials.

- Use recovery method: read from database which NMR tubes should be recovered.

- Remove cap and POM ball.

- Pipette sample through septum in new vial.

- Rest of NMR tubes is pipetted into waste.

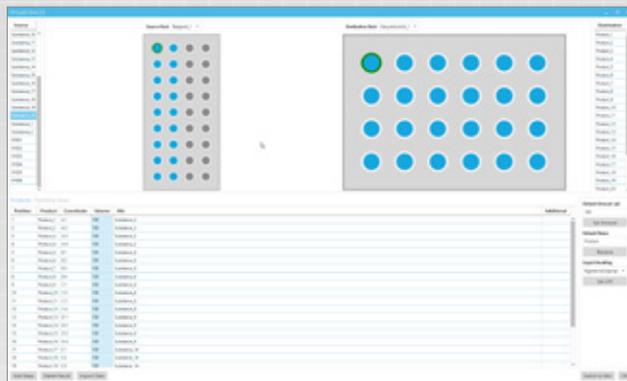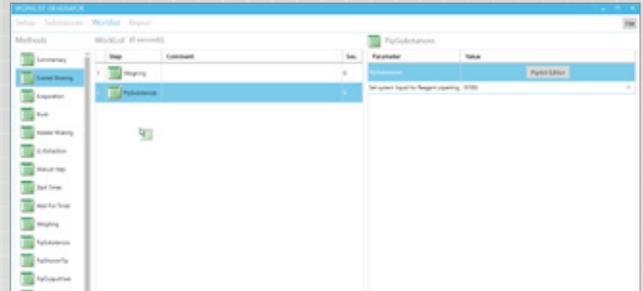- Partly used racks should be reused (saving free positions within database).

SOFTWARE SOLUTION FOR YOUR SPECIFIC PROCESS

Every process step is designed modularly. Therefore a variety of processes, using differing powders, chemicals and solvents, may be completed. The customized sequential arrangement of the process is composed with a specified MS Excel® file or our Worklist-Generator which is then executed with our WinLissy®-software. With the Worklist-Generator you can create individual processes with many adjustable parameters for sub steps.

Worklist Generator

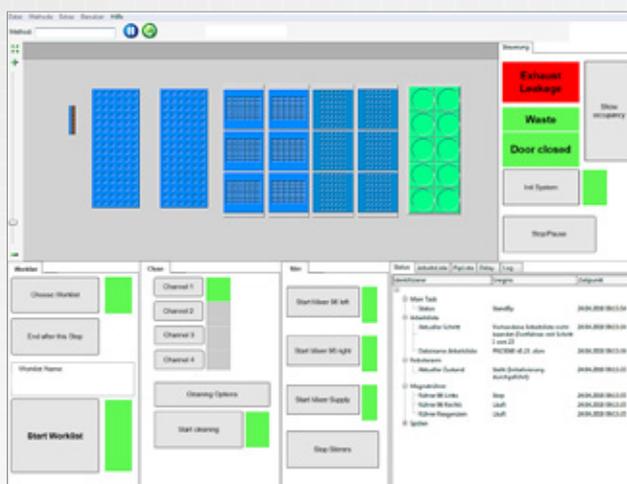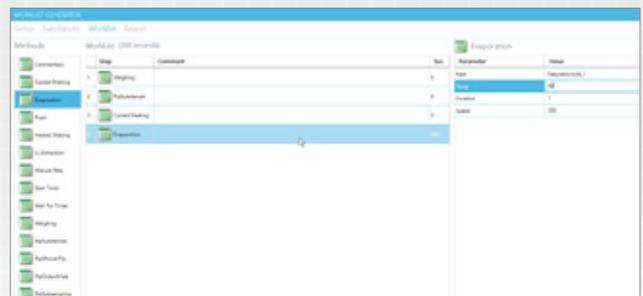Drag and drop the needed methods to the desired positions of the worklist.

Pipetting Editor

For pipetting steps, the Pipetting-Editor is opened for the definition of racks and number of pipetting steps. Every filled position is indicated blue and the selected positions are highlighted green.

Method Definition

Input the desired time or anything the method requires, while you are defining the process.

WinLissy®-Software

With our WinLissy®-software every prepared worklist of the Worklist-Generator is executable. Communication with customer specific databases or LIMS is easily conceivable.

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