ZINSSER ANALYTIC
by Gardner Denver

Malt Analysis Sample Preparation Platform

Automate the Malt Analysis Preparation Process

Designed for your processes

Zinsser Analytic designed a liquid handling platform for automated malt analysis with high throughput and validated workflows. Processes such as the extraction of malt/groats, the subsequent and independent filtration, in addition to further analysis preparation can be completed with our solution. Further analysis such as turbidimetry, flavor color, density/viscosity, dissolved nitrogen, beta-glucan and final fermentation of extracts.

- ✔ Precise Dispensing of Temperate Water to Malt Samples
- ✔ Reproducible and Reliable Results
- ✔ Customized Software Interface
- ✔ Gravimetric or Volumetric Aspiration and Dispensing of Solutions
- ✔ Stirring and Retaining of Magnetic Stirring Bar During Transportation of Beakers
- ✔ Identification and Documentation of whole Malt Process

HARDWARE DESIGN

The hardware was designed for flexible use of one to maximum four filtration racks in addition to pipetting racks (without a filtration adapter) solemnly for pipetting steps.

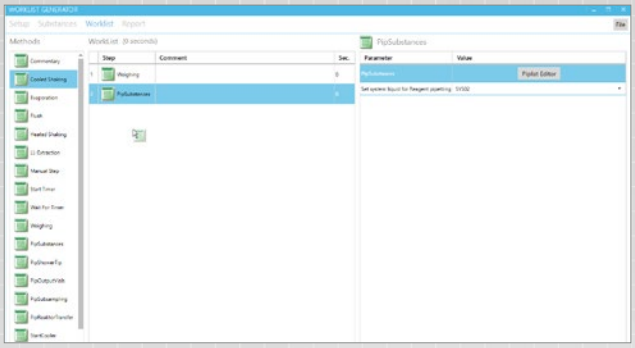
1	Target racks for further analysis (with filter tubes, flexible vibrating tubes or Falcon™ tubes).
2	Standard pipetting tip.
3	One of four positions where a rack with/out filter adapter.
4	Magnetic gripper for stainless steel beakers and retention of stirring bar.
5	Filtration racks with filters; one to four can be placed on the platform.
6	Magnetic stirrer and drying station.
7	Bottle for liquid waste.
8	Temperature controlled basins for stainless steel beakers.
9	Priming station for dosage manifold.
10	Temperature controlled water reservoir for dosage manifold.

PROCESSES OF MALT ANALYSIS

INPUT	• Maximum two racks of 48 stainless steel beakers each with malt samples and magnetic stirrers (initial weight known).
PROCESSES 	**MASHING PROCESS:**
	• Dispense temperature controlled water in malt-containing beakers, with a dosage manifold of six pipetting tools.
	• Temperature control with internal and external temperature sensors.
	• Defined process temperatures with time intervals.
	• Extraction of malt/groats in 80 mL water.
	• At the end of process cooling to 20 °C.
	FILTRATION PROCESS:
	• Can be started separately and consecutively after malt process started.
	• Software obtains how many and which slots are still available in the racks.
	• Take malt-containing beaker from malting pan.
	• Dry outside of beaker with isopropanol and compressed air.
	• Weigh beaker with sample and calculate correct desired final volume and add water, if necessary (with 6 mL precision syringe pump).
	• Move beaker to magnetic stirrer and stir to homogenize the malt suspension during transportation.
	• Move beaker to filtration rack, empty beaker into filter while stirring and retaining magnetic stirring bar.
	• Disposal of magnetic stirring bar and beaker in two separate waste containers (for cleaning and reuse).
	PIPETTING PROCESS:
	• Standard slurry pipetting tip with a 3 mL-syringe pump in addition to an extra-large slurry pipetting tip connected to a peristaltic pump.
	• Definition of filtrates that should be worked with and desired volume to be added through import file.
	• Remove upper part of filtration rack.
	• Pipette 2 mL from filtrate of lower part of filtration rack in PP tubes *OR* crucibles (standard slurry pipetting tip) *OR* 8 mL in flexible vibrating tubes and 10 to 20 mL in Falcon™ tubes (extra-large slurry pipetting tip).
OUTPUT	• With this process a throughput in excess of 200 malts in 24 h is possible, when applying mashing, filtration and pipetting.

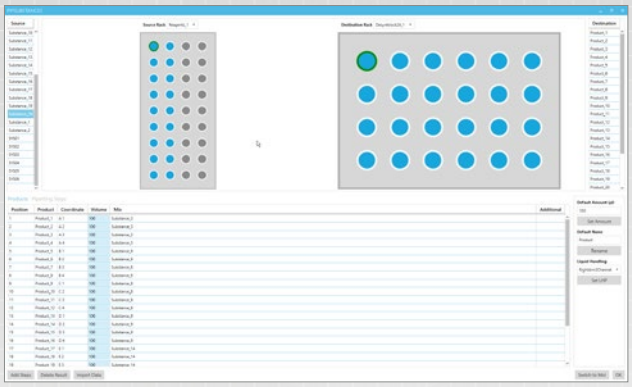
SOFTWARE SOLUTION FOR YOUR SPECIFIC PROCESS

Every process step is designed modularly. Therefore a variety of processes, using differing powders, chemicals and solvents, may be completed. The customised 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.



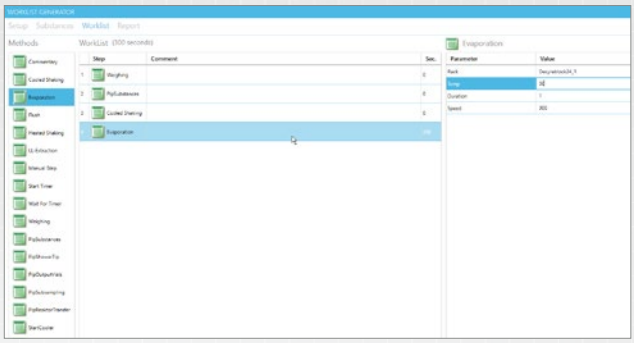
Worklist Generator

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



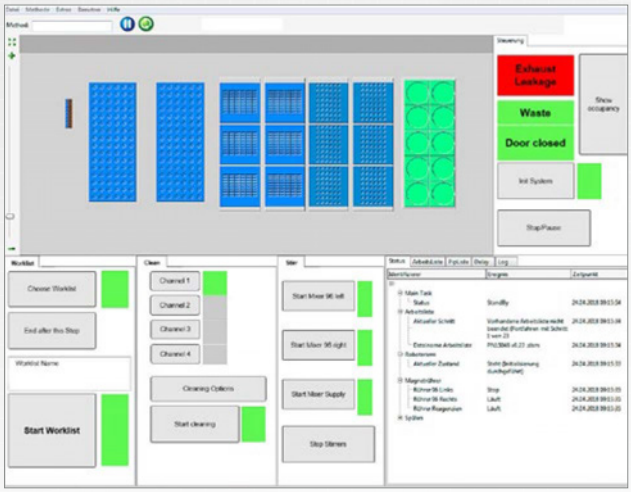
Pipetting Editor

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.

Gardner Denver

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