

SWING VISCO: Automated Viscometry Expandable with Rheology

Dispenses all kinds of material
Ensures consistent high quality measurement
Keeps everything perfectly clean



Throughput:
“... 3 minutes per sample including washing and
drying the spindle...”
(Testimonial from leading personal care company)

SWING VISCO:

Automated Viscometry

Expandable with Rheology

Automated viscosity measurements combined with our proprietary overhead gravimetric dispensing principles and our software allows you to automatically dispense virtually any product (from low to high viscosity, pastes, even melted waxes) and subsequently measure its viscosity. Clean, reproducible and well documented, day by day! Furthermore the concept allows you to measure viscosity virtually everywhere (e.g. formulation vessel, sample vials)



Key Advantages:

- Automated unattended viscosity measurement
- 3 minutes per sample
- Expand your workflow capabilities (e.g. Rheometry, viscosity adjustment, density, pH, mixing, powder dispensing and many more possibilities)
- Perfect sample conditioning especially for quality control

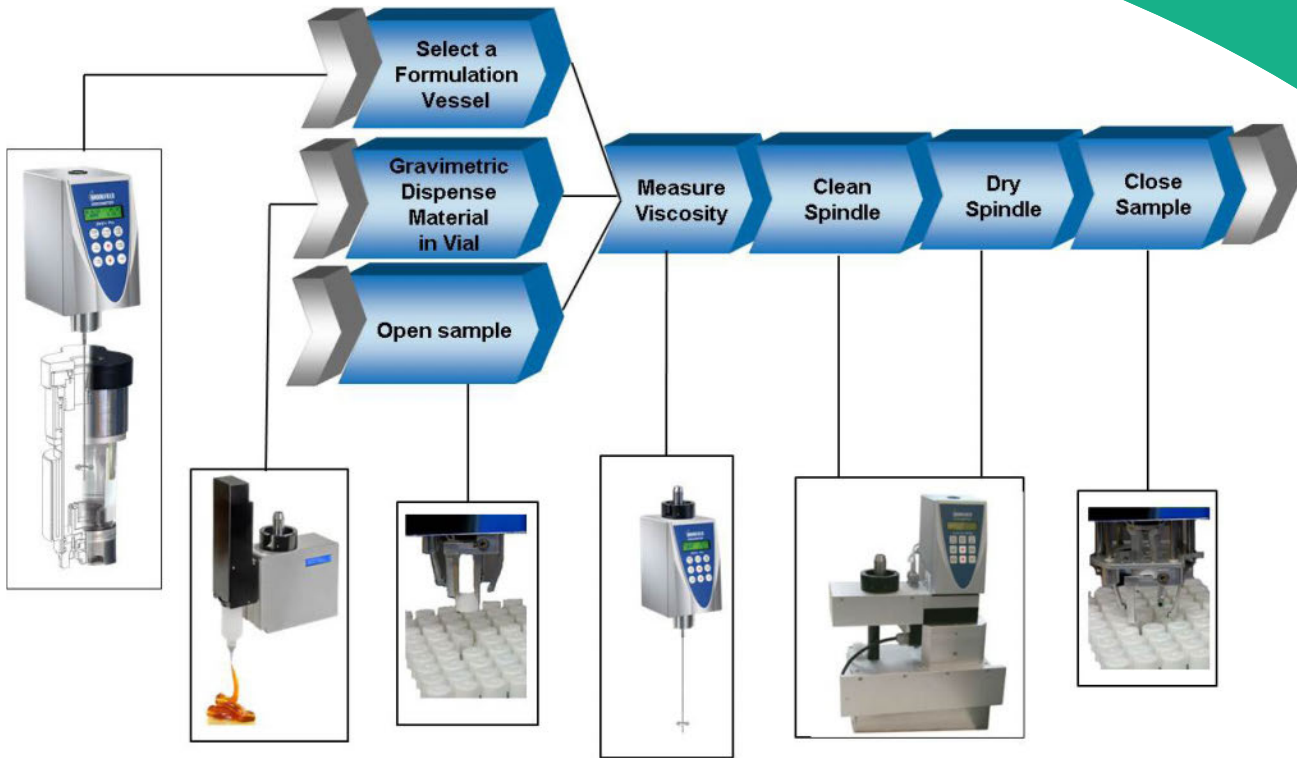


Watch the video here



REDUCES COSTS
ENSURES CONSISTENT HIGH QUALITY
SUITABLE FOR ANY KIND OF SAMPLE

Typical Workflow Example

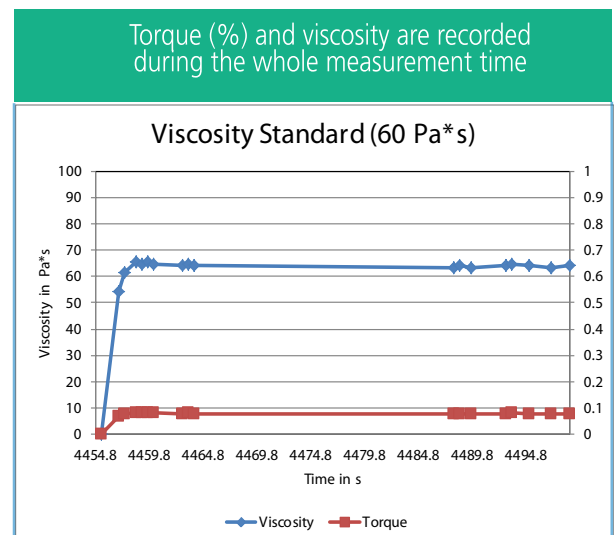
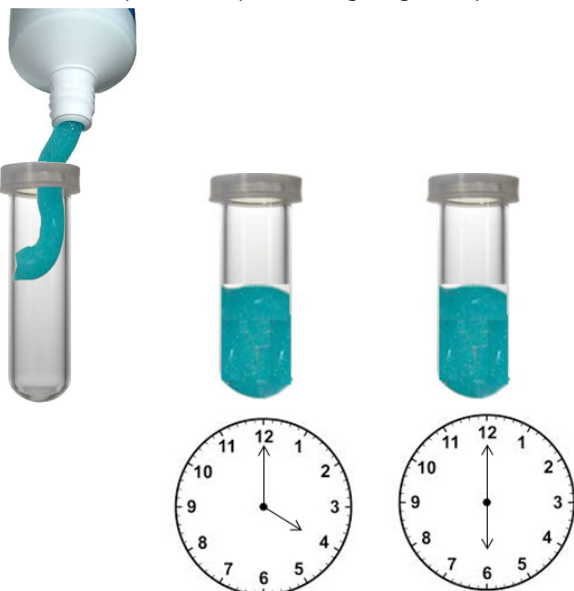


Chemspeed's software-driven **SWING VISCO** avoids tedious and repetitive tasks in research, service and production facilities and significantly increases the level of performance. You are able to measure viscosity combined with sample preparation by either dispensing the product into vial, measure viscosity directly in a formulation vessel or by opening pre-filled vials from e.g. production, QC, conditioned storage and shelf life testing.

Check out the related videos on our website: www.chemspeed.com/videos

Flexible sample conditioning for repeatable high quality measurements:

- Self contained environment
- Automated opening/closing of sample containers
- Controlled sample while processing (e.g. temperature)



Technical Details

Chemspeed's **SWING VISCO** deck modularity allows the user to execute and perform a variety of workflows in a fully automated fashion.

E.g. Brookfield Viscometer LV and/or RVDV-II+ Pro BK (integrated in a Chemspeed platform as a robotic tool)



- Range: 75 - 40'000'000 mPa·s (cP).
- Speed range: 0.1-200 rpm.
- Accuracy: +/- 1 % of full scale range.
- On-line display.
- Temperature range: -70 °C to +220 °C, depending on deck configuration.
- Viscosity reproducibility: +/- 0.2 %.

Additional features and benefits to automation:

- Integrated software
- Multistep test programs (e.g. sample preparation or formulation combined with viscosity measurement)
- Automated and constant z-movements of the Viscometer (e.g. to penetrate a sample and/or to generate z-resolved viscosity data in a well defined and reproducible way).
- Viscosity control and adjustment through conditional tasks
- Calculation of average viscosity
- Data processing with mathematical models
- Automated analysis of user defined values for QC
- Import of sets of test parameters, generate template programs of parameters (speed, time of measurement, etc.)
- Export data along with experimental data sets of choice to Excel, Chemspeed's Workflow Management Software, VLab or virtually any other database
- On-line display
- Measurement with in-line constant delta time between virtually any action (e.g. open vial) and viscosity measurement, controlled humidity, controlled temperature, etc.)
- Time coupled measurements (e.g. overnight)
- One measurement and adjustment at a time

- Washing installation for the viscosity spindle (passive or active washing bath)
- Export data as viscosity in cP or Pa·s, temperature, speed, spindle type, time of measurement
- Temperature controlled measurement
- Torque/viscosity logged during all measurement time

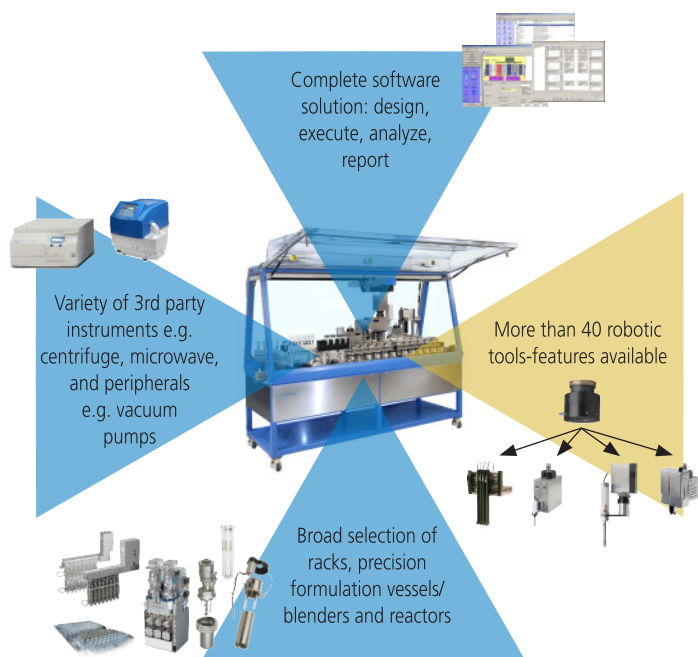
Extension for Rheology by integration of TA instruments Rheometer as an example



TA DHR-1

- Discovery Series Hybrid Rheometer has unprecedented performance specification and delivers unsurpassed direct strain control, direct stress control and normal force measurement
- Optical encoder dual reader
 - Advanced drag cup motor
 - Normal force rebalance transducer
 - Active temperature control
 - Bob + cmp with disposable cup and bob is cleaned

4 Dimensions of Modularity & Flexibility



Chemspeed's unique and modular concept of 4 dimensions allows your team(s) of chemists to automate their workflows and thus significantly increase their efficiency and throughput. Virtually any combination of Chemspeed's functionalities can easily be configured on one robotic platform:

- Individual platform configuration tailored to your workflow with market-proven off-the-shelf components.
- Robotic platforms which can easily be integrated with one another to enable multi-workflow processes (e.g. Formulation, Application and Testing procedures all integrated in a single platform).
- Easy to use software package (Design, Execution, Analysis, Reporting)
- A broad selection of racks, precision formulation vessels/blenders and reactors, including disposables.
- A variety of third party instruments & software.
- An exchangeable robotic tool interface which allows you access to more than 40 robotic tool-features. These tool-features can be automatically exchanged during a run.
- Tailor-made, expert driven customer care packages.

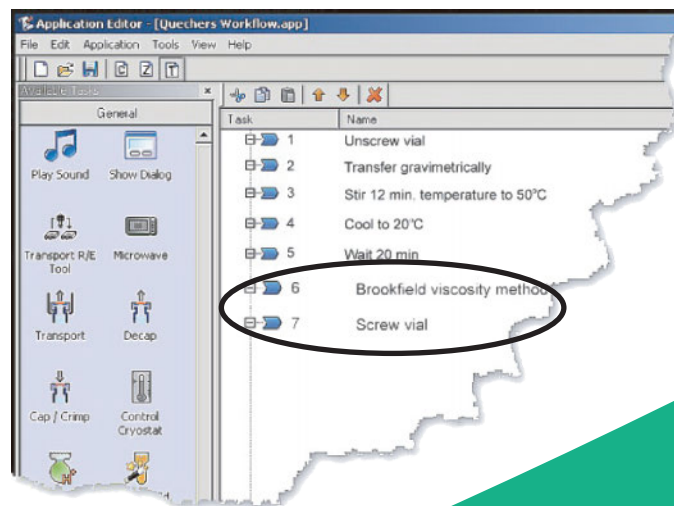


Complete Software Solution: Design, Execute, Analyze, Report

Chemspeed's AutoSuite User Interface & Executor software packages execute and control all modules of the entire product development cycle. They control all Chemspeed robotic platforms and any other integrated 3rd party software and hardware.

AutoSuite **SWING** is a software with a user friendly interface which allows easy workflow oriented programming. Many features such as gravimetric dispensing are automatically calibrated, eliminating tedious optimization steps.

- The AutoTeaching tool simplifies dispensing applications without manual trials and is applicable to solids, liquids, waxes, etc., eliminating the need for manual optimization before the dispenses are done.
- **Easy programming: drag-and-drop workflow steps or just execute standard workflow protocols.**
- Barcode tracking.
- Easy integration with virtually any LIMS or ELN software.
- AutoSuite Application Programming Interface (API) for 3rd party software and hardware integration.
- Optional, Chemspeed VLab for DoE and Data Analysis/Reporting. It includes a full document management system (electronic lab-journal) and is 21 CFR Part 11 compliant. The software scales from a single PC to large network installations with multiple hardware and clients.

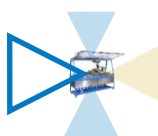
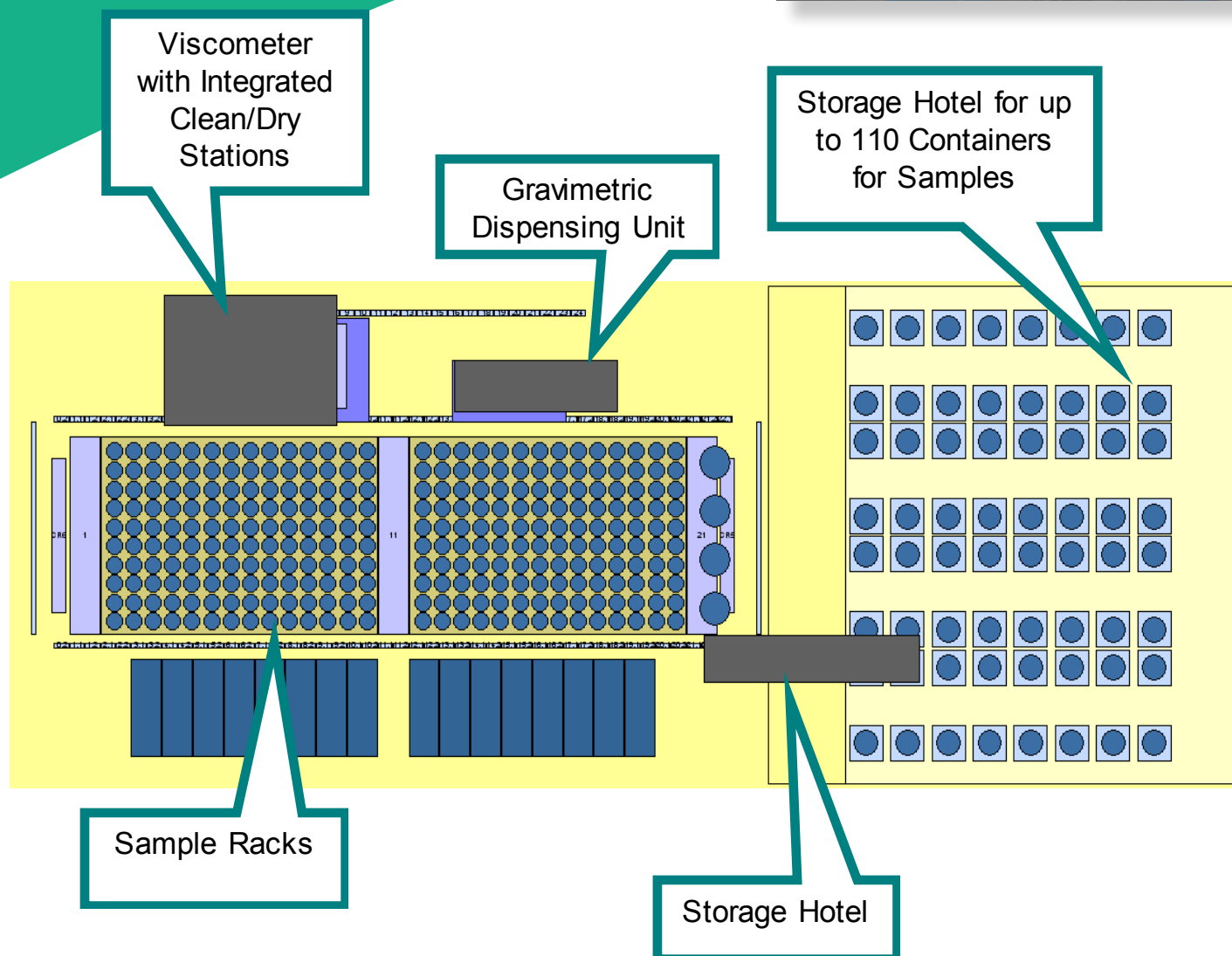


Easy Programming - Intuitive interface



Platform Configuration Example

A typical **SWING VISCO** deck consists of sample racks and the following tools: a viscometer with integrated clean and dry stations, gravimetric dispensing unit, storage hotel for up to 110 high viscosity containers and transfer tool.



Plug-in (3rd Party) Solutions

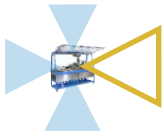
Chemspeed integrates a large number of 3rd party components either on and/or off the deck.

All tools and accessories from Chemspeed's **SWING**, **ISYNTH**, **FORMAX**, **APPLICATOR** and **INVESTIGATOR** platforms are fully compatible with the **SWING VISCO** robotic platform and vice versa.

Many upgrade options are available.

- For integrated, automated rheology, e.g. TA DHR-1.
- Sample conditioning, e.g. heating/cooling.

Please refer to the Workflow Portfolio brochure for a large selection of integrated third party instruments or see next page for a large selection of robotic tools available, or contact your Nikyang representative for further information.



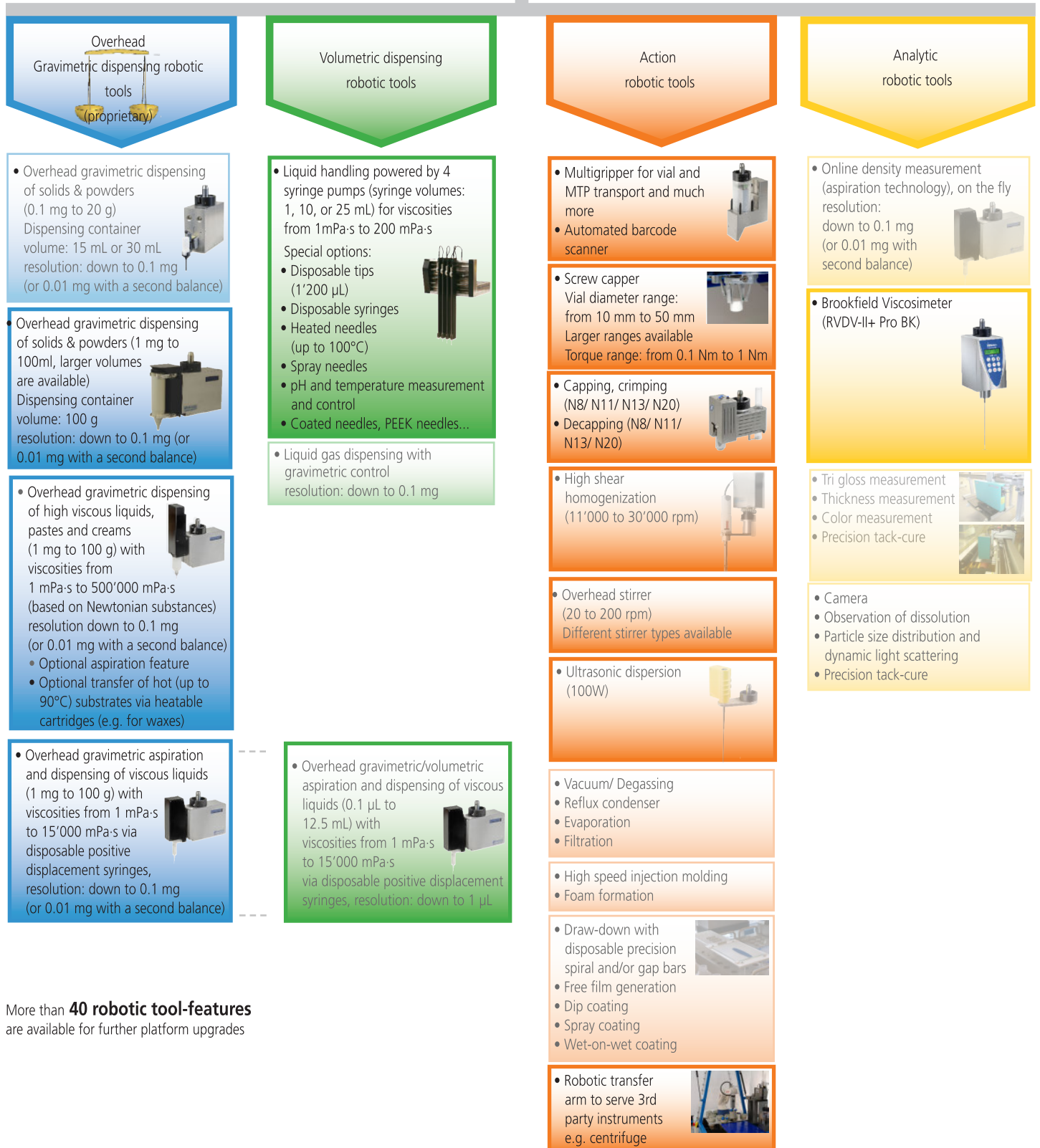
Robotic Tool-Features

More than 40 robotic tool-features can be integrated with Chemspeed's unique robotic tool exchange technology, including unrivaled overhead gravimetric dispensing, which can operate whilst mixing, heating, refluxing and cooling. Virtually any combination of these robotic tools is possible.

The highlighted features are often seen in combination with viscosity measurement.



Robotic tool exchange interface (proprietary)



More than **40 robotic tool-features** are available for further platform upgrades

What you should remember...

- **SWING VISCO** brings paradigm shifting modularity in automated viscosity measurements.
- Patented overhead gravimetric dispensing capabilities.
- Easy to use task driven workflow software.
- Exchangeable robotic tools.
- Unique and versatile overhead viscosity tool for direct measurement in various kinds of sample vials and tubes or high performance formulation vessels.
- Faster measurement and reduced errors by elimination of reformatting.
- A large choice of hardware and software tools allow fine-tuned adaptation to your workflow.

Robotic platform dimensions

- Robotics: X, Y and Z arm with rotating alpha-axis and automatic tool exchange
- Optional heating/cooling, shaking
- Controlled atmosphere: inert gas, with optional glove box
- Trolley
- Dimensions (l x d x h):
 - SWING size:
 - with trolley: 1'330 x 910 x 1'860 mm (4' 4 3/8" x 3' x 6' 1 1/4")
 - without trolley: 1'330 x 910 x 1'200 mm (4' 4 3/8" x 3' x 3' 11 1/4")
 - SWING XL size:
 - with trolley: 2'350 x 950 x 1'920 mm (7' 70" x 3' 2" x 6' 4")*

* Dimensions when hood is closed (excluding peripherals, electronic cabinet and connectors)

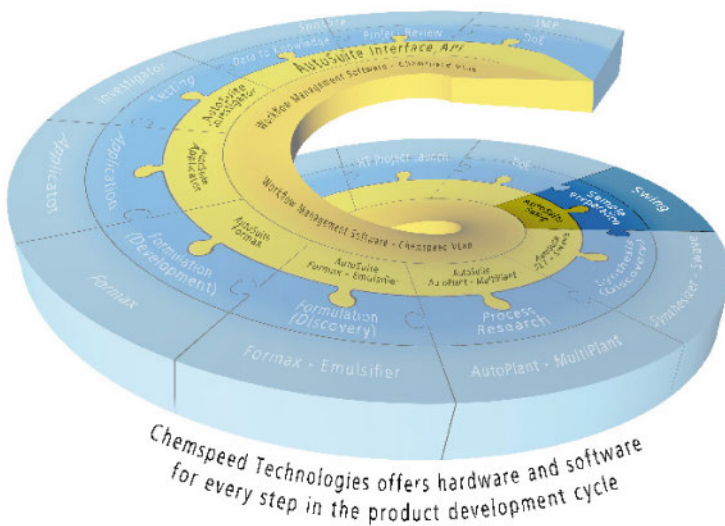
Please note that all Chemspeed's platforms can be integrated with each other. All robotic platforms are compatible.



15 Years of Experience in Automated Chemistry.
Customized Workflow Solutions.

 Swiss Quality Products.

An International Team of Highly Experienced Chemists.



Chemspeed Technologies offers hardware and software for every step in the product development cycle

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