

EMULSIFIER

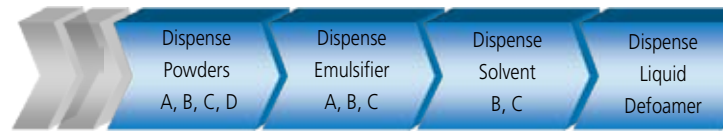
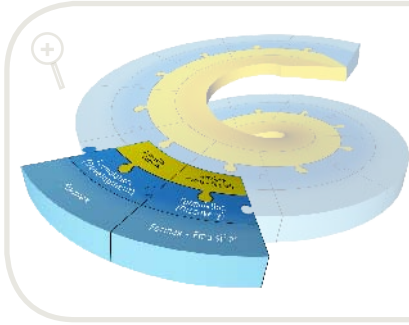
from concepts to success

- Faster & better preparation, application and testing of emulsion & suspension concentrates -



Highly efficient mixing
& reactor control while
adding gravimetrically any
compound!

from concepts



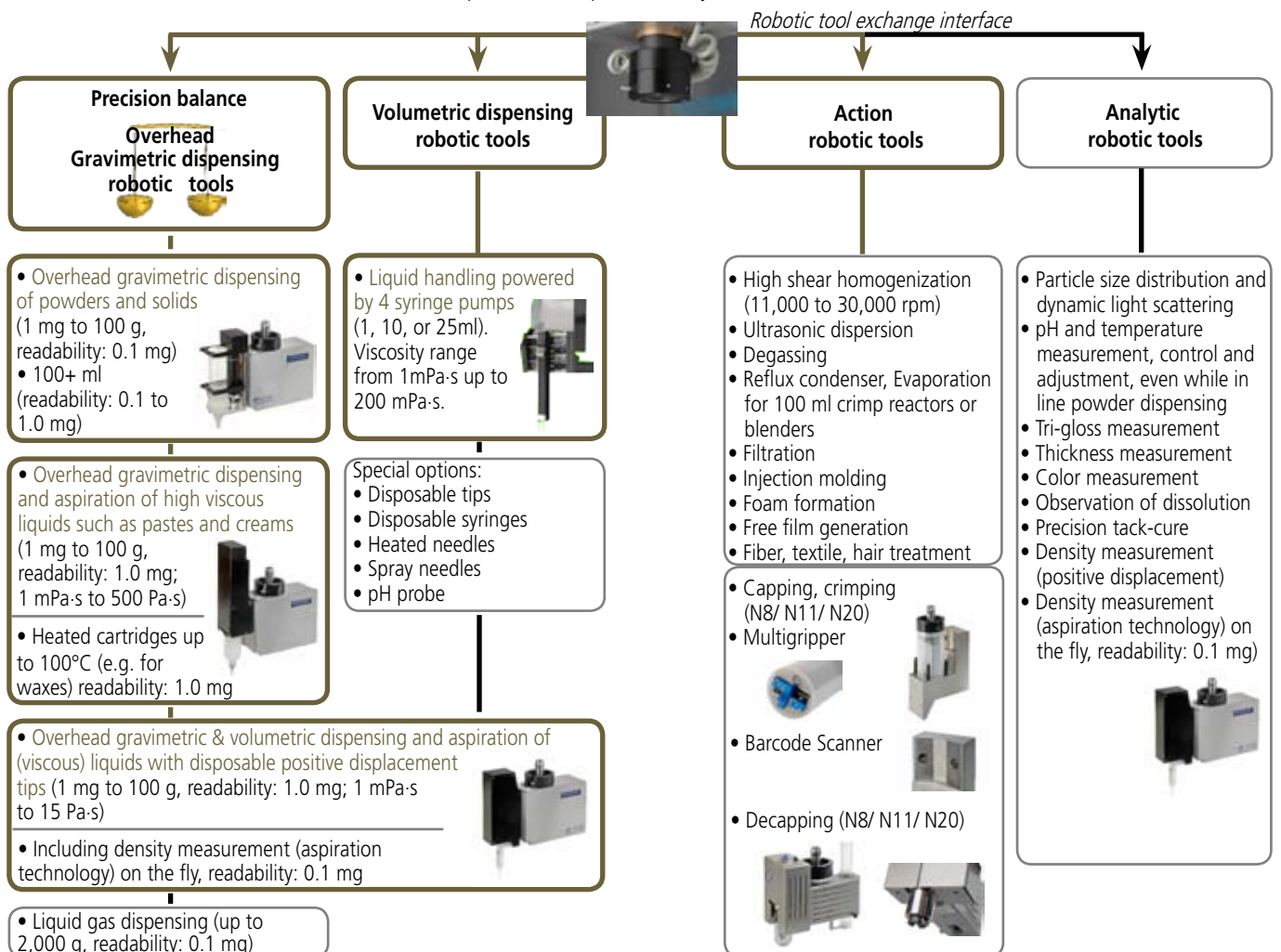
EMULSIFIER, a modular robotic platform enabling quality emulsion & suspension concentrates

EMULSIFIER is Chemspeed's software-driven robotic platform for challenging emulsion & suspension concentrates workflows in the Agrochemicals, Nutrition, Home Care, Personal Care and other industries.

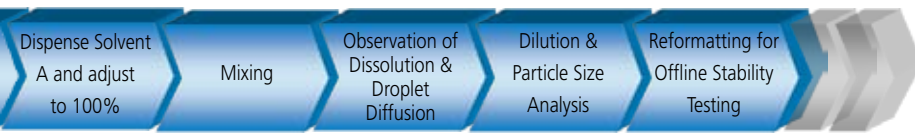
- **EMULSIFIER** brings paradigm shifting modularity enabling an easy to use workflow task driven software
- Exchangeable robotic tools
- Unrivaled gravimetric dispensing technology while mixing & scraping, heating, refluxing and cooling
- High quality and flexible disposable vials and/or formulation vessels
- From emulsion concentrate formation to stability testing in conditioned chamber
- A large choice of hardware and software tools allow fine tuned adaptation to your workflow

Unrivaled gravimetric dispensing technology & exchangeable robotic tools

More than 30 features can be delivered with Chemspeed's unique robotic tool exchange technology, including unrivaled overhead gravimetric dispensing tools while mixing & scraping, heating, refluxing and cooling. Generating and analysing complex formulations becomes more efficient and accelerates the product development R&D cycle.



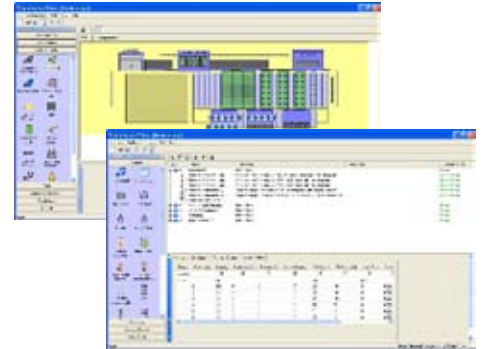
to success



Powered by *AutoSuite EMULSIFIER* user interface

AutoSuite EMULSIFIER is an intuitive user interface software which allows easy workflow orientated programming. Many features such as the gravimetric dispensing steps are automatically calibrated, eliminating tedious optimisation steps.

- The *AutoTeaching* tool allows to dispense solids, liquids, viscous liquids, and waxes without manual optimizing steps, and with high precision, accuracy and speed
- Easy programming: drag-and-drop workflow steps
- Barcode tracking
- Smooth integration into Chemspeed's workflow management software (see reverse)
- *AutoSuite* Application Programming Interface (API) for 3rd party software and hardware integration (standard integration of Spotfire, JMP, VirtualLab etc. as well as many instruments listed on the reverse page)



Array of disposable vials for emulsion & suspension concentrate formation

Chemspeed is able to dispense virtually any type of compound into any type of container (vial, microtiter plates, bottles, reactors, formulation vessels etc.) (Please refer to other Workflow Brochures)

Chemspeed's *EMULSIFIER* deck-modularity combined with Chemspeed's overhead gravimetric dispensing technology, allows to formulate, apply, test 100 - 150 emulsion concentrates per day in a fully automated fashion.

- Overhead gravimetric dispensing of powders, liquids, and viscous liquids
- High performance mixing by shaking, stirring, and/or speed mixing
- Heating & cooling (-70°C to 250°C) for e.g. forced stability testing
- Observation of dissolution and droplet diffusion while overhead gravimetric dispensing
- Emulsion concentrate application & testing by integrated sampling, dilution, and particle size analysis
- Reformatting for conditioned stability testing
- Barcode sample tracking, e.g. disposable barcoded crimp vials in different sizes (5 ml, 20 ml)
- Scale-up in Chemspeed's high-performance formulation vessels



Tray view - 200 disposable automatically crimpable vials



Batch, continuous or in-line particle size measurement



Conditioned stability testing



Expanded view of the precision formulation vessel/blender: scraper, reflux condenser & measurement unit for suspension concentrate formation



Overhead gravimetric dispensing of paste while mixing, heating and cooling (optional aspiration & heating for e.g. hot transfer)



Overhead gravimetric addition of solid while mixing, heating and cooling

Accessories

All tools and accessories of Chemspeed's Swing, Sweigher, Swave, Synthesizer SLT II, Formax, Applicator and Investigator are fully compatible with the **EMULSIFIER** robotic platform and vice versa (see the high output product development spiral below). Please refer to Chemspeed's other workflow brochures for modularity examples.

- Integrated particle size analysis
- Integrated IR-camera for homogeneity assessment
- Integrated profilometry
- Optional speed mixing
- Sample aging kit
- Conditioned sample chamber for stability and aging testing
- Cleaning module
- Tailor-made customer care module
- Many tools, including formulation vessels and storage/ ageing dispensing cartridges are optionally available as disposables

High output product development spiral

Chemspeed's AutoSuite workflow management software integrates with:

1. All of Chemspeed's robotic platforms for

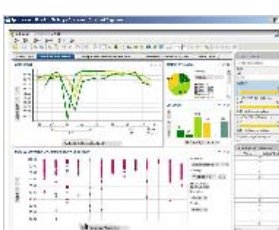
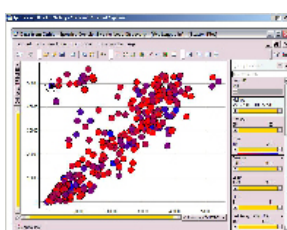
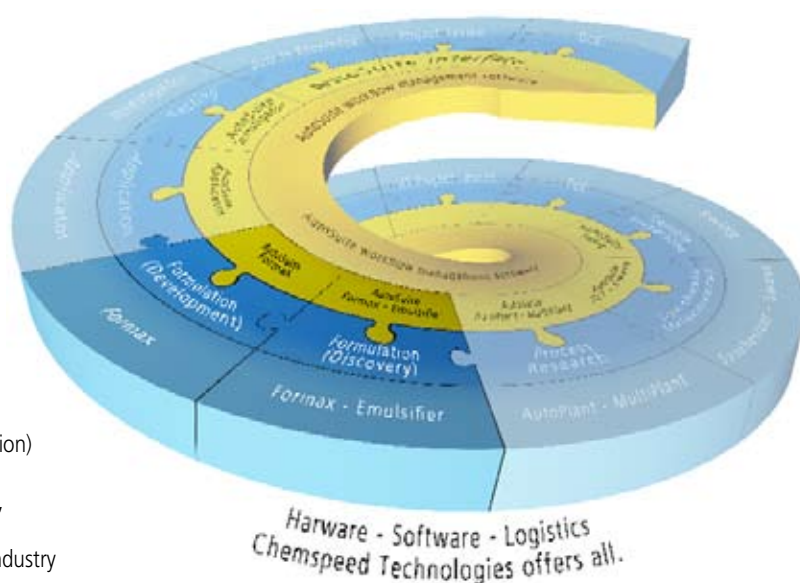
- Sample preparation workflows
- Parallel array synthesis workflows
- Parallel process research workflows
- High output formulation workflows
- High output application workflows
- High output testing workflows

2. Third party instruments

Chemspeed integrates a vast number of 3rd party components (e.g. in robotic tools). Please refer to Chemspeed's Workflow Portfolio brochure and/ or contact your Chemspeed's representative.

3. Third party software such as

- SpotFire (premium data visualization and selection)
- JMP (design of experiments - DoE)
- VirtualLab (lab journal, workflow management, instrument control)
- and many other laboratory software through industry standard languages (SQL, .net, C#, etc)



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