

SITA

Lab Solutions

SITA *FoamTester*

Analyse foam parameters
Control surfactant effects



- ✓ **Fully-automated foam analysis**
- ✓ **Reproducible foaming**
- ✓ **Measures foam and liquid volume**
- ✓ **Analyses foam structure**
- ✓ **Records drainage**
- ✓ **Automated self-cleaning system**

Create foam — Measure foam — Analyse foam — Understand foaming

Automated SITA foam testing

Functional components of the SITA FoamTester



Sample preconditioning

Filling

Foam testing

Cleaning

Automated foam testing benefits

- ✓ Autonomous repetition of test runs without user intervention
- ✓ Easily reproducible test results
- ✓ Quick and simple screening of test and sample parameters

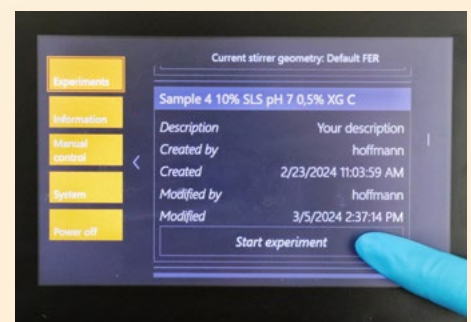
Convenient sample handling

- Automatic sample preconditioning with external devices (e.g. tempering or adding additives, concentration of additives)
- Integrated sample reservoir with magnetic stirrer for running multiple test series
- Automated self-cleaning system with external liquid supply (e.g. tap water)



Design flexible experiments

- By drag'n'drop using fully parameterisable device tasks and supportive functions (as loops and timers)
- Create multiple re-usable templates and precise repeatable test routines
- Remotely from the office PC
- Carry out using the device



Create foam

Differentiation of various sample formulations and reproducible test sequences using an application-oriented foam creation with proven SITA method

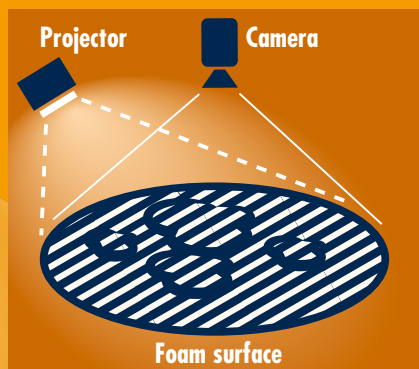
- Established SITA standardised stirring disc
- Minor influence of the vessel glass on foam formation
- Removable measuring vessel with stirring unit
- Variable stirring parameters: speed, duration, acceleration, direction, intervals



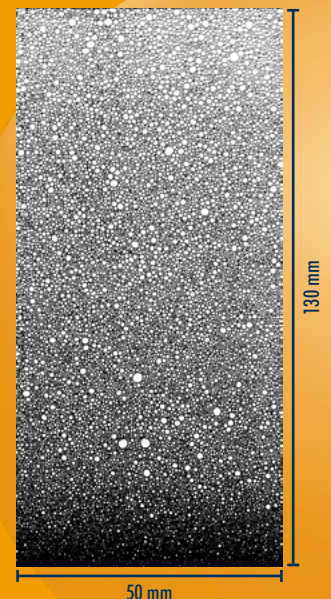
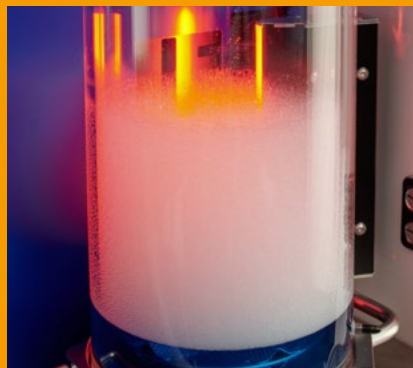
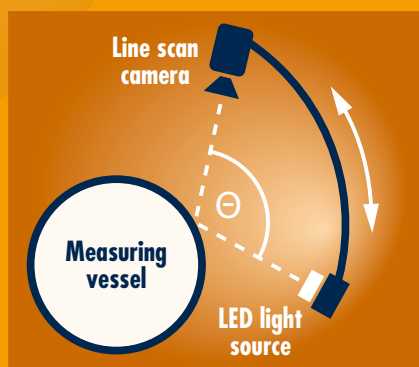
Measure foam

Use of optical, contactless measuring methods

- **Foam Surface Scanner:** Determines the topography of the foam surface and therefore the total volume using the structured-light method

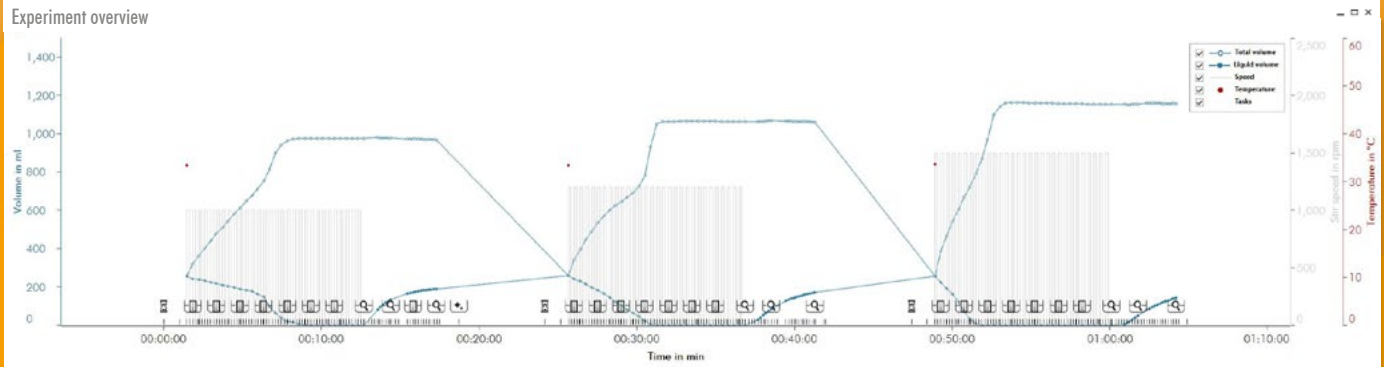


- **Foam Interface Scanner:** Determines the foam structure and the liquid level by optimal use of a movable camera system, which illuminates and observes the measuring vessel at an angle Θ above the critical angle for total internal reflection



- Both scanner systems work in conjunction to determine the total volume (liquid and foam), the residual liquid volume and the foam volume
- Records foam structure over an area of 130 mm x 50 mm
- All measurements in the same measuring vessel, connected to the thermal circuit
- No limitations in reference to sample's light transmission and conductivity

Analyse foam and understand foaming

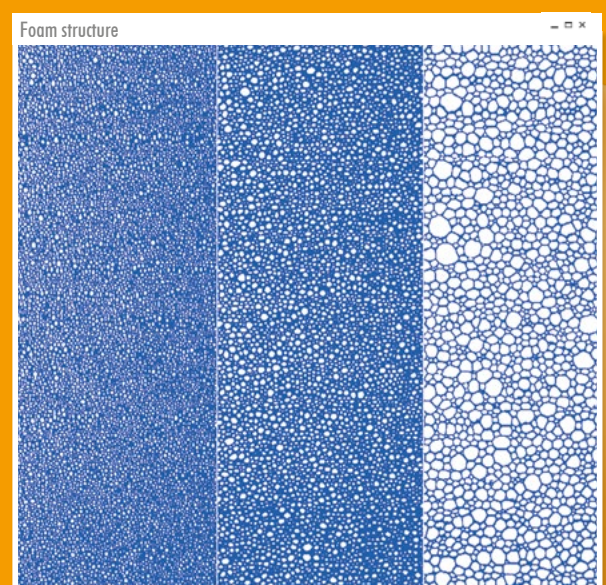
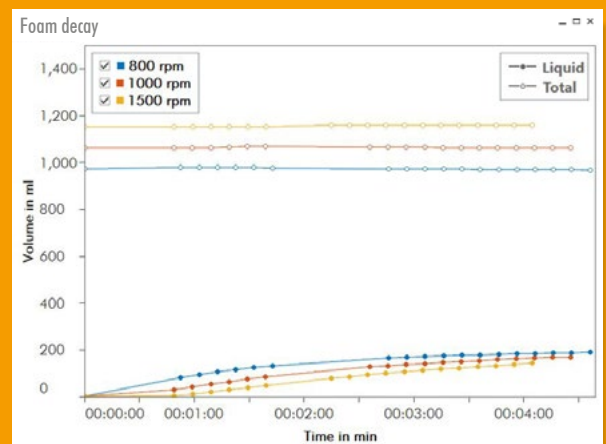
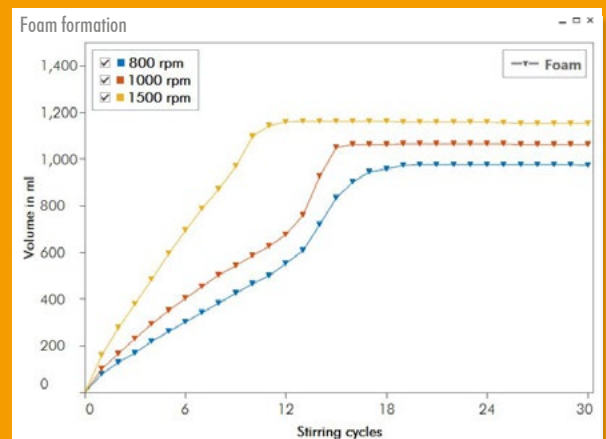


Practical evaluation of measuring data using SITA-FoamLab software remotely from the office PC

- Full transparency of measuring progress and results by intuitive visualisation
- Complex data is presented in significant numerical values (Foam Characteristics)
- Analysis of foam decay and drainage
- Analysis of bubble sizes and shapes in foam structure
- Easy comparison and visualisation of multiple measuring and reference results
- Easy export of data and results for documentation

Comprehensive characterisation of foam and foaming

- By determining foaming potential and half-life period
- By evaluating the individual height-dependent foam structure parameters
- By tracking time dependent changes in the foam structure



Fields of application

Optimisation of surfactant containing products in

- Product development
- Raw material development and selection
- Product processing and application
- Quality and process assurance

Application examples

Cosmetics

- Influence of the formulation and raw materials on foaming behavior
- Foam stability of toothpaste and foam baths
- Foam structure as a reference point for user perception

Cooling lubricants

- Influence of water hardness on aging processes
- Durability of defoamers
- Optimisation of the filtration process to prevent foaming

Inks, paints and coatings

- Effectiveness of defoamers

Cleaning agents

- Influence of temperature on the foaming of spray cleaners
- Influence of contaminations on the foaming in cleaning baths

Liquid processing industry

- Foaming behaviour of flow suspension in paper industry
- Evaluation of foaming behaviour during bottle filling of beverages
- Adjustment of foaming production auxiliaries in textile manufacturing

Enter the world of REAL foaming

- ✓ Fully automated processing and flexible screening of liquids
- ✓ Industry-proven and application-oriented recreation of foams
- ✓ Advanced measuring methods and data analysis
- ✓ Real insights into foaming



Technical data

Foam creation

Recommended sample volume	(200 ... 500) ml
Usable measuring vessel volume	1,500 ml (incl. foam) Dimensions: height 180 mm diameter 110 mm
Capacity of sample reservoir	2,000 ml
Sample tempering of measuring vessel and sample reservoir	(0 ... 60) °C using an optional thermostat
Stirring speed	(0 ... 2,000) rpm (bidirectional)
Adjustable stirring programs	speed, duration, direction, acceleration

Analysis of foam volume (Foam formation and decay)

Measurement values	total volume, liquid volume
Evaluated parameters	max. foam volume, foam potential, drainage half time
Measuring range total volume	(0 ... 1,500) ml; resolution 1 ml
Measuring range liquid volume	(0 ... 500) ml; resolution 1 ml

Analysis of foam structure

Parameters	number of bubbles, bubble size distribution, mean bubble diameter, roundness
Evaluation area	height 130 mm, width 50 mm
Resolution	3,200 dpi

General data

Rinse connection	3/4" (2 ... 6) bar
Operating temperature	(10 ... 40) °C
Power supply	(100 ... 240) V, (50 ... 60) Hz, 300 W
Dimensions (HxWxD)	(770 x 450 x 305) mm
Weight	approx. 35 kg
PC interface	Ethernet

The SITA Foam Testing System is available in Expert and Basic versions

- The Expert version offers the full functionality of the SITA FoamTester, including the licence for foam structure measurements.
- The Basic version offers the full functionality of the SITA FoamTester, but without the foam structure measurements.

Accessories: External laboratory devices for sample conditioning

- Additional functions to extend experiments by tempering and dosing liquids
- Automatic integration and direct control within the test sequence



Automatic dispenser
CAT Contiburette μ 10D
for the dosage of liquids



Thermostat Lauda ECO E4S
for heating of sample liquids
(room temperature ... 200) °C



Thermostat Lauda ECO RE 415S
for cooling and heating of sample liquids
(-15 ... 200) °C