



SURFTENS universal

High quality equipment for acquisition of measuring data for contact angle, surface free energy and surface tension (SFE)





Mechanics, Optics, Software and Service from one hand

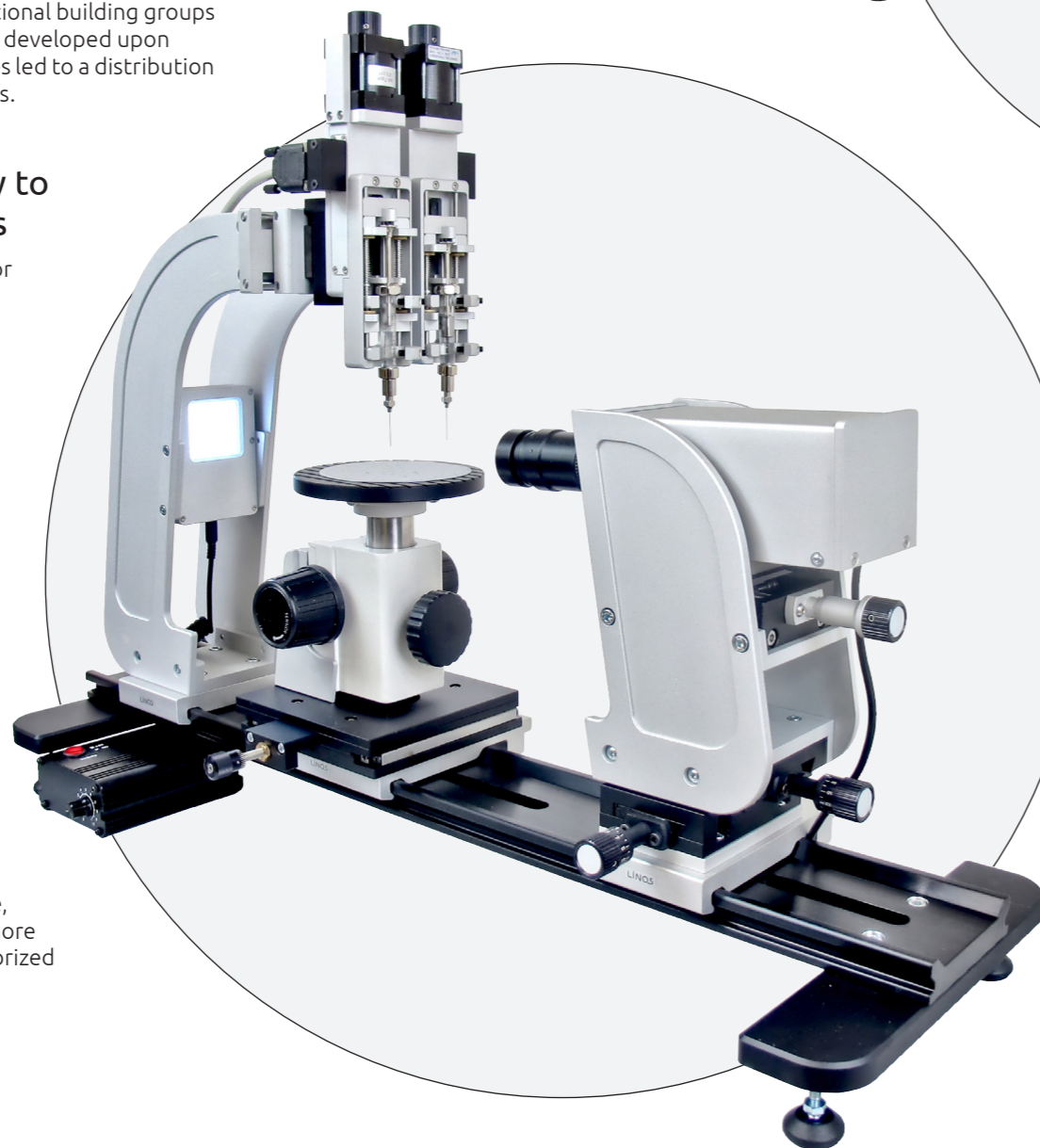
For 25 years OEG GmbH has been specialized in development and production of optical measuring equipment.

A key success factor of the company is the unification of the complete production process, beginning from conception, development of mechanics, software and electronics to mechanical production, assembly and calibration in our facilities. Thus, our high quality measuring instruments can be adapted fast and cost effective to meet our customer's special needs and demands. Besides of standard optional building groups customer specific modules can be developed upon request. Those convincing features led to a distribution of our equipment on all continents.

SURFTENS – the entry to wetting investigations

The SURFTENS universal is used for measuring the contact angle and surface free energy (SFE), for both, industrial and research purposes. The concept of the SURFTENS universal is based on its modular setup, whereas even the low-cost basic version provides precise and reliable wetting investigations. This basic device can be equipped with additional building groups, which will provide new functions and operational features to meet the respective customer's requisition. For example, this modular setup allows the measurement of a diversity of specimen geometries.

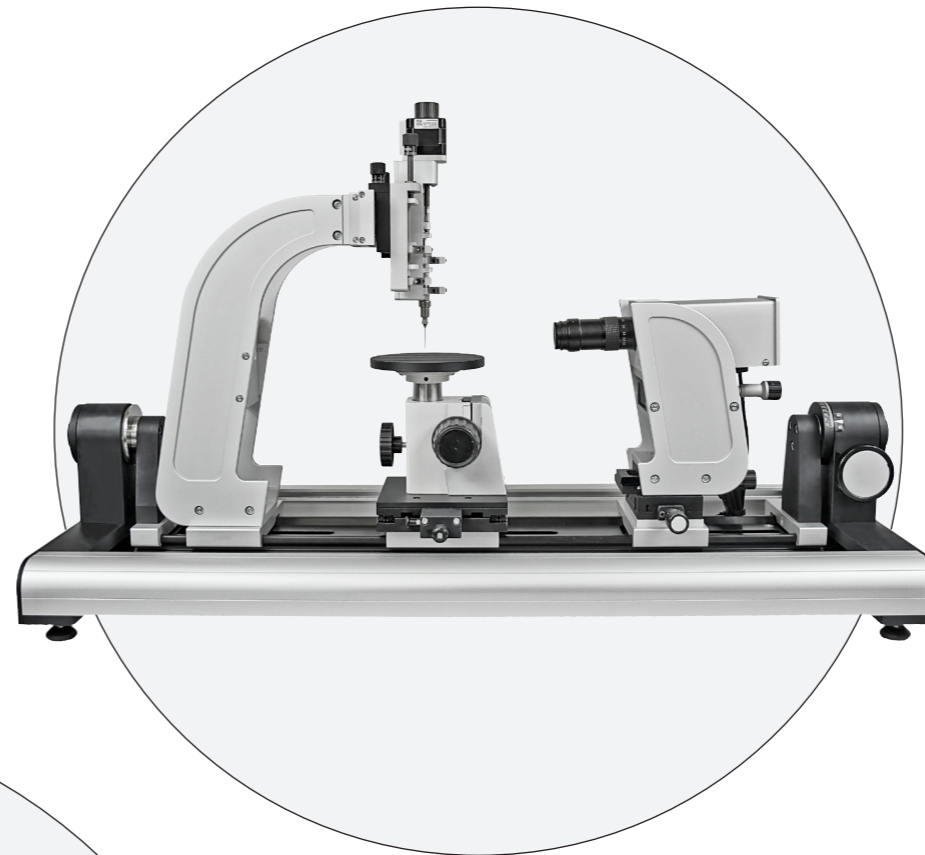
The basis system comprises a single manual dosing unit and a simple mechanical specimen table, but can be easily equipped with more sophisticated compounds as motorized single- and multi-dosing units and motorized specimen tables.



Easy handling, accurate measurements – fully conform to German DIN norms

All configurations of SURFTENS universal as well as all software versions are fully accordant to the German Industrial norm DIN.

In the basic configuration SURFTENS universal comprises an adjustable manual lifting table, which allows the sensitive and rapid adaption of the measuring height according to different specimen thicknesses.



Even the basic lifting table features a lateral pull-out, avoiding any contact of the needle with the specimen while the sample is placed.

Additionally, the table is moveable transversely to the optical axis using a spindle in order to achieve the correct specimen positioning. Moreover, the height position (z-axis) of the dosing system can be adjusted.

Optionally the SURFTENS universal can be equipped with a double dosing unit to perform measurements of the surface free energy (SFE). Alternatives to the manual dosing units are motorized and software controlled dosing systems, enabling the precise automatic dosing as well as the accurate measurement of the advancing and receding angle.

As standard measuring optic, even in the basis setup, a zoom lens is used. In connection with the uniform and bright LED lighting the drop is portrayed with an optimal quality, free of distortion and with the optimal magnification.

The basic version of the SURFTENS Universal includes a 1.3 Mp USB camera with a transfer rate up to 25 frames per second in full resolution, but can be replaced with numerous alternative camera solutions, providing higher speed (fps) or higher resolution according to special demands.

Without changing the basic setup, higher frames rates can be achieved by restricting the AOI (Area of Interest) though.

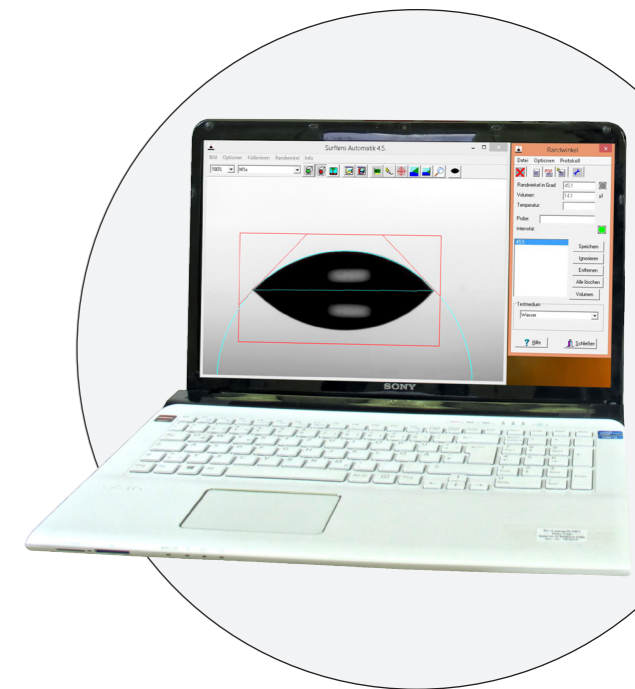
SURFTENS – Image processing software for accurate drop analysis

SURFTENS universal is operated by the image processing software SURFTENS which allows precise measurement of contact angle and the calculation of the SFE.

Furthermore SURFTENS offers functions like video recording, image storage, image labeling and creating measurement protocols.

The recorded videos can be played back and analyzed, whereby all measuring functions of SURFTENS are available to the video and to each single picture of the video.

In case motorized compounds are equipped, the software version SURFTENS-M will provide a convenient and reliable control of those units.





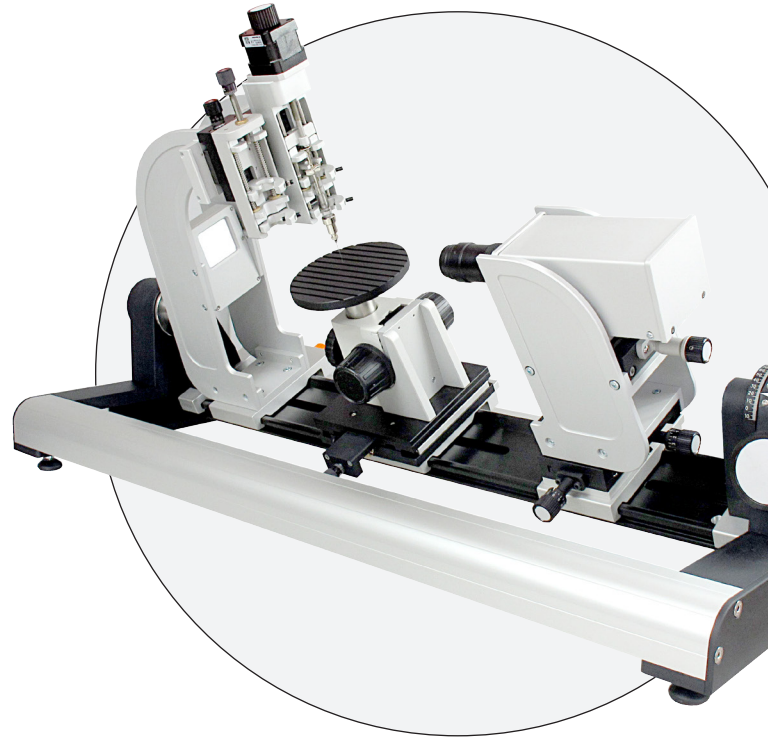
Calculation of Surface free energy SFE

For determination of the SFE a double dosing unit is highly recommended (manual or motorized), which enables the convenient analysis of the contact angle of two to five different test liquids (e.g. water and diiodmethane) on the solid test specimen. From the obtained data the software calculates the SFE using the algorithms according to Wu or Owens-Wendt-Rabel-Kaelble (WORK), respectively, as recommended by the DIN standard.

Tilting stage for measurement of dynamic contact angle and roll-off angle

The optional manual tilting stage offers the possibility to do an exact analysis of drops on inclined surfaces.

The whole measuring system can be inclined by the tilting stage in steps of 1° to a maximum tilt angle of 90°. At the same time, the software measures the right and left side contact angle independent from each other.



Measurement of surface tension of liquids

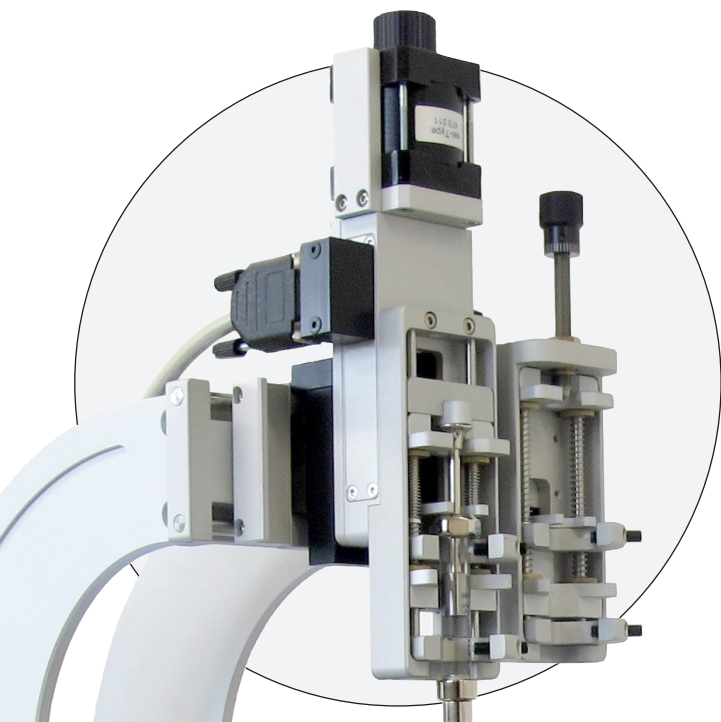
The optional software module SURFTENS PD determines the surface tension of liquids by the pendant drop method.

Applications of SURFTENS universal

- Characterization of cleaning processes
- Characterization of surface pretreatments
- Studies on the wettability of surfaces
- Characterization of roughness of the surface

Measuring methods

- Static contact angle between liquid and solid
- Dynamic contact angle (advancing angle, receding angle)
- Roll-off angle
- Calculating the surface free energy (SFE) from the contact angles of up to 5 test liquids
- Measuring the surface tension by the pendant drop method
- Tempered measurements up to 80°
- Acquisition of videos, subsequent analysis of recorded videos



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