SURFTENS 300 WH

Contact angle meter with 3-axis wafer roboter, 200mm-OCL and / or 300mm-FOUP Loadport

The Master Tool for Semiconductor Technology

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Contact angle meter SURFTENS 300 WH

SURFTENS 300 WH: Fully automatic contact angle and surface tension measuring instrument for 300mm wafer with wafer handling robot and 300mm loadport

GENERAL SETUP
- Basic frame
- 3-axis stepping motor controller with micro step-by-step operation and joystick
- measuring table for 300mm-wafer
- automatic dispensation system, dispensation volume adjustable
- automatic sinking of the dispensation system up to putting the drop on the sample, setting off position trainable, dispensation position trainable
- illumination (brightness adjustable)
- high resolution b/w CCD camera of 440,000 pixels
- high resolution PCI Frame Grabber (256 gray scales, 768 x of 576 pixels)
- 32 bit Windows software SURFTENS 4.2 for cross table and dispensation steering, measurement and data evaluation
- PC with flat screen 19", Windows XP/7 (englisch) operating system
- 3-axis wafer handling robot with vacuum endeffector
- FOUP opening loadport for 300mm wafer
- wafer scanner

OEG provides clean room class 10.000 for the production of the instruments

Power supply
- single cable connection 115V/16 A to the main power distribution unit of the instrument
- EMO is integrated

GENERAL SOFTWARE
- user levels for different operator degrees
- connection to SPC via network interface card
- operating system Windows 2000
- automatic recognition of slot occupancy
- automatic measurement with different recipes
- slot integrity is warranted
- notching before measurement
- Measurement data will be stored on local disc - any backup storage on network server will be organized by customer
- LAN compatible
- Client software for result evaluation on office PC is included
- Manual operation mode (via joystick)
- real time representation of live video image on PC screen
- Saving of images
- lettering of images with measuring values, measuring marks and free texts
- freely configurable measuring protocols

MEASUREMENT GENERAL
- Dispense System for one media (DI-water), 10 ml media stock
- Programmable droplet size
- Automatic placement of the droplet on the wafer, movement for droplet placement is programmable
- Easy disassembly/cleaning of the dispense system
- System capable for measurements with different liquids

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MEASUREMENT
- Tool/Software supports free definable measurement maps
- The whole wafer surface for 300mm is in reach for the dispense system (excluding edge area 10mm)
- Complete automatic measurement (FOUP -> Wafer positioning -> notching -> automatic droplet placement by free configurable recipes -> measurement -> FOUP)
- contact angles between 85° and 95°, <10°, >170° will be excluded from measurement range of the tool

Cooperation of the customer
Facilities requirements
- Air pressure (CCA) 5 bar, PU-6 connection
- vacuum 0,8 bar, PU-6 connection
- power supply 230V/1 phase 50 Hz, power consumtion 1,5 KW
General
- Customer provides sufficient number of primed 300mm wafers plus FOUPs for installation and acceptance as well as for system test during manufacturing process

TOOL CONFIGURATION

Configuration - unit description:

No	Item		Description
1	Wafer handling system		3-axis wafer handling robot FOUP opening system 300mm (Fixload) Laser scanner Vacuum endeffector
2	SURFTENS automatic		3-axis-stepper motor controller with joystick stepping motor driven wafer table (PTFE-coated) automatic dispense system automatic droplet positioning (teachable) automatic notching illumination system CCD camera Frame grabber Software package
3	PC		Industrial PC, Flatscreen, keyboard, mouse

Technical Parameters for contact angle measurement

Contact angle measuring instrument SURFTENS 300 WH provides the fully automatic measurement of the wetting behavior of solids (e.g. wafers or glass substrates for flat panel displays) under clean-room conditions, as well as for series tests and systematic analysis. The SURFTENS 300 WH enables the reduction of subjective factors and time involved for contact angle measurements in research, quality- and production inspection.

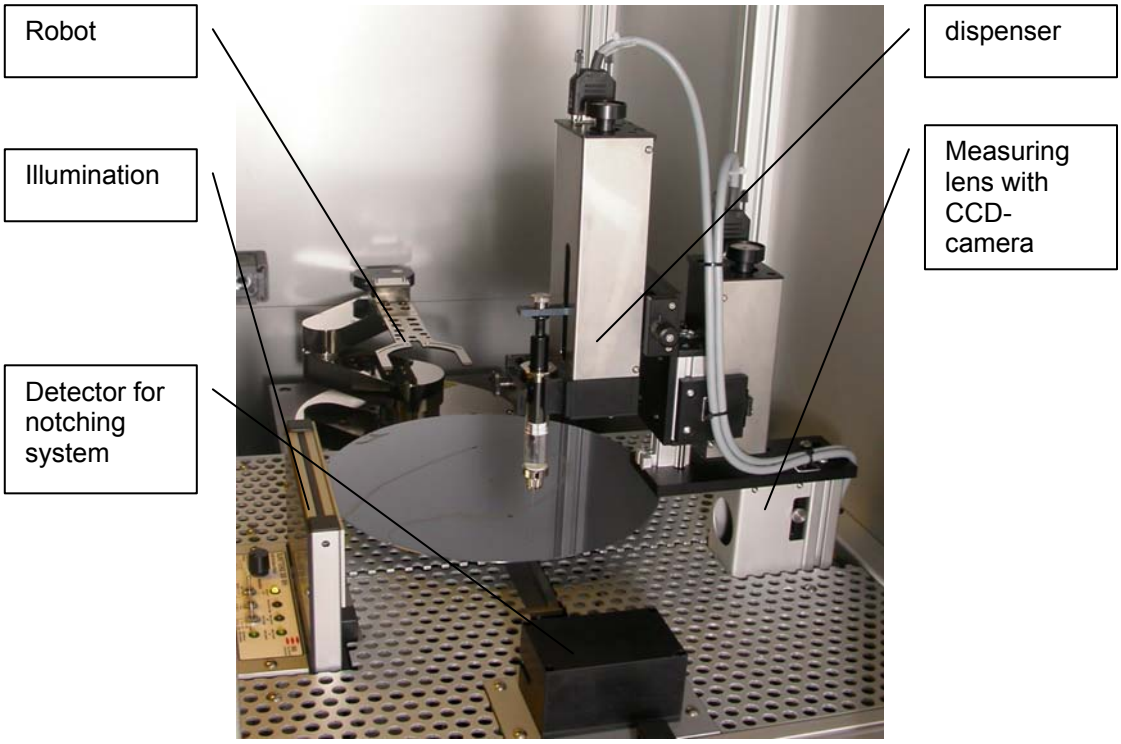
The SURFTENS 300 WH consists of the basic instrument with the following technical equipment:
- Single needle support with vertical positioning;
- Measuring stage, for fully automatic accurate sample positioning;
- Telecentric measuring lens;
- Video measuring system with high-resolution CCD-camera;
- High-performance video digitizing board (frame grabber) for the PC;
- Illumination with continuously adjustable intensity for a homogeneous back lighting;
- Control and measuring electronics for the teach-in procedure, graphic display with keyboard and video display
- Power supply by PC
- The 32-bit software SURFTENS developed for Windows2000/XP
- Control of the sample position in x- and φ-direction, the needle position in z-direction,

Contact angle meter SURFTENS 300 WH

- Static and dynamic contact angle measurement according to the sessile drop method
- Calculation of the surface and interfacial tension from the sessile drops
- Calculation of the surface free energy of solids and their components according to the theorie of Wu,
- Statistics and measurement error analysis
- 3 axis wafer handling robot
- Loadport for 300mm wafer
- scanner for slot occupacy
- housing

Technical data for conatct angle measurement

- sample size: 300 mm Si-Wafer
- Position accuracy ± 0.05 mm in the sample level;
- Range of contact angle measurement 10° … 170° ; ± 0.5° measuring accuracy of the video system (excluded is the contact angle range of 85°...95°
- Range of surface and interfacial tension 1·10-2 … 2·103 mN/m; resolution: min. ± 0.05 mN/m
- CCD-camera with a resolution of max. 752 x 582 pixels
- Video system: High-performance image processing system with 132 MBytes/s data transfer rate (compatible to European standard CCIR and US standard RS-170) , up to 50 images/s digitizing speed
- Measuring methods: Sessile Drop method
- Clean-room classification: 100



OEG GmbH
Wildbahn 8i
D-15236 Frankfurt
Germany
Tel.: +49 335 5213894
Fax: +49 335 5213896
www.oeggmbh.com
info@oeggmbh.com

Representative

Contact angle meters
Measuring microscopes
Thin film stress measurement
Micro diamond scribers