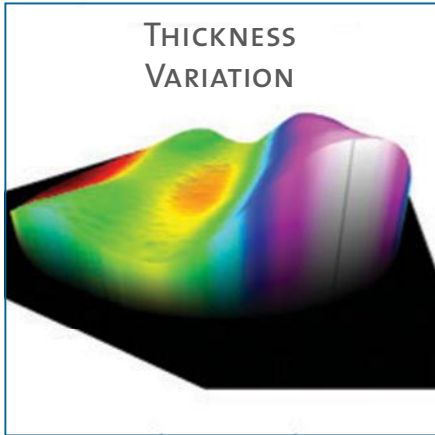


Tropel® FlatMaster® MSP Wafer Surface Metrology System

Advanced Optical Measurement System for Wafer Flatness, and Thickness Variation

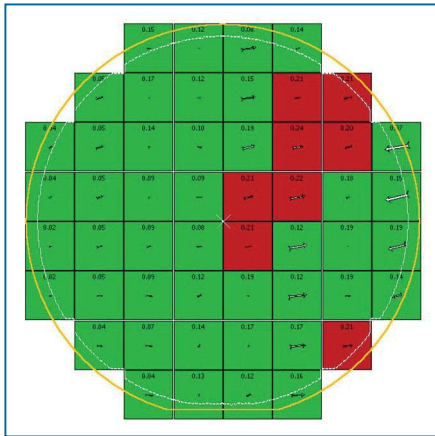


The ability to measure flatness, thickness, and thickness variation of semiconductor wafers is critical for wafer processing. Traditional contact probes and conventional interferometry systems are too slow or do not have the necessary accuracy over the full wafer surface area.

The Tropel FlatMaster® MSP Wafer (Multi-Surface Profiler) is a frequency stepping interferometer that provides fast and accurate metrology for wafers up to 300 mm. In seconds over 3 million data points are collected with sub-micron accuracy enabling total thickness and flatness characterization over the entire wafer surface.

MEASUREMENT PARAMETERS

LOCAL (SITE)	GLOBAL
- SBIR (LTV)	- Thickness
- SBID (LDOF)	- GBIR (TTV)
- SF3R (LTIR)	- GF3R (TIR)
- SF3D (LFPD)	- GFLR (NTV)
- SFLR (LTIR)	- GFLD (NTD)
- SFQR (LTIR)	- Bow, Warp, SORI
- SFQD (LFPD)	



Key Benefits:

- Improves product quality, manufacturing yield and throughput
- Lowers manufacturing costs
- Increases process awareness and understanding
- Reduces time-to-market
- Increases customer satisfaction

Powerful:

- High resolution and accuracy for thickness across the entire wafer surface
- Capable of mapping sub-micron thickness changes in the wafer after processing (i.e. CMP, Epi)
- Large dynamic range
- Excellent reproducibility from operator to operator

Flexible:

- Measures a broad variety of material types and surface finishes

Easy to Use:

- Simply place the part on the system and measure
- Little or no fixturing required
- Intuitive recipe driven operation
- Suitable for production, quality control, or development

Tropel® FlatMaster® MSP Wafer Surface Metrology System Specifications

	FlatMaster MSP-150	FlatMaster MSP-200	FlatMaster MSP-300
Field of View	150 mm (5.9 in)	225 mm (8.9 in)	305 mm (12.0 in)
Z-Resolution	1 nm (0.04 μin)	1 nm (0.04 μin)	1 nm (0.04 μin)
Lateral Resolution	0.15 mm (0.006 in)	0.1 mm (0.004 in)	0.17 mm (0.007 in)
Measurement Range (Z-axis)	Up to 300 mm (11.8 in)	Up to 300 mm (11.8 in)	Up to 300 mm (11.8 in)
<hr/>			
Measurement Time	30 seconds typical		
Measurement Method	Frequency Scanning Interferometry		
Measurement Data Points	Up to 3.1 million points per measurement		
Materials	Metals, polymers, ceramics, glass, and many other materials		
Surface Finishes	Fine-ground, lapped, polished, super-finished, and others		

Accuracy & Repeatability

	Accuracy*	Repeatability*
Flatness	60 nm (2.4 μin)	20 nm (0.8 μin)
Parallelism	75 nm (3.0 μin)	20 nm (0.8 μin)
Depth/Height**	100 nm (4.0 μin)	20 nm (0.8 μin)

* Refers to instrument limited accuracy and repeatability (1 sigma) as based on measurement of traceable artifact.

** Height/depth accuracy and repeatability are dependent on part geometry; consult Corning Tropel for more details.

Tropel Metrology Software (TMS™)

Standard Parameters	Flatness, depth/height, parallelism, line profile, surface profile
Report Layouts	User-configurable including: open GL, 3-D, 2-D, line trace (X/Y, radial, diameter, circular), color contour, isometric, histogram, user-defined tolerances, pass/fail criteria
Data Management	Available in report layouts, also database, CSV and serial port, optional export to industry standard database formats

Environmental and Facility

Temperature	15 °C to 25 °C (59 °F to 77 °F)
Rate of Temperature Change	< 0.5 °C per 4 hours (A change of ± 0.5 C (± 3.6 F) requires recalibration)
Vibration Isolation	Passive isolation included
Humidity	5% to 95% relative humidity, non-condensing
Power	100-240 VAC, 50/60 Hz, 4 Amp
Air/Vacuum	See facilities document
System Dimensions (W x D x H)	160 cm x 103 cm x 150 cm (63 in x 40 in x 59 in)
System Weight	390 kg (860 lb)

Standard System Configuration

Computer	Windows® based PC
Software	TMS™ Analysis Software
Traceable Artifact	Included

This product is covered by one or more U.S. patents.

All specifications are subject to change.

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OpenGL® is a Registered Trademark of SGI.

Windows® is a Registered Trademark of MicroSoft Corporation



For additional information about the FlatMaster® MSP System or other Tropel® Metrology Instruments, please contact:

CORNING

Corning Tropel Corporation
 60 O'Connor Road
 Fairport, New York 14450-1328 U.S.A.
 tel: +1 585 388 3500
 fax: +1 585 388 3414
 metrology_info@corning.com
 www.corning.com/metrology