Tropel® FlatMaster® MSP Surface Metrology System

Advanced Optical Measurement System for Flatness, Parallelism and Height/Depth

CORNING

Measuring complex, high-precision parts with multiple surfaces is usually done with contact profilers. Contact gages are slow, collect small amounts of data and typically require complicated programming. But now, with the FlatMaster MSP (Multi Surface Profile), a non-contact frequency scanning interferometer, multiple surfaces (with up to 300 millimeters of separation*) are simultaneously measured in just seconds. Hundreds of thousands of data points are collected and analyzed, providing complete surface characterization for flatness, parallelism, and height/depth with sub-micron accuracy. The FlatMaster MSP can measure parts up to 300 mm diameter, on a variety of materials and surface finishes.

* FlatMaster MSP 150 and 300
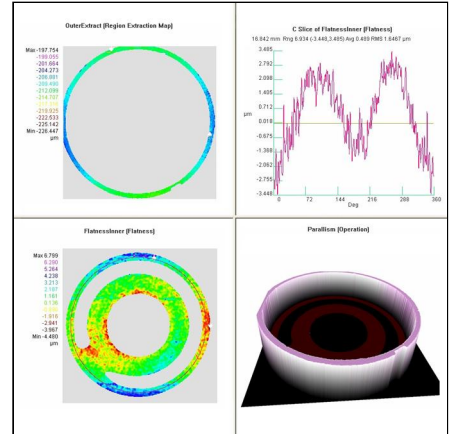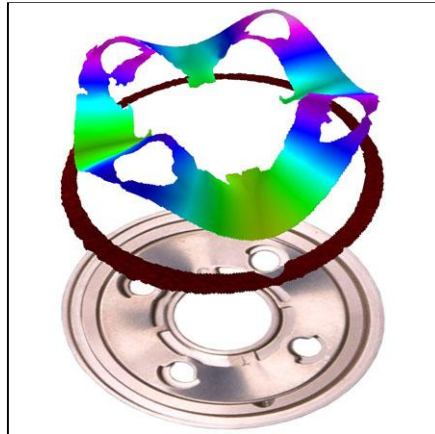
Key Benefits
- Improves product quality, manufacturing yield and throughput
- Lowers manufacturing costs
- Increases process awareness and understanding
- Reduces time-to-market
- Increases customer satisfaction

Powerful
- High resolution and accuracy on multiple surface at multiple heights over the entire measurement range
- Large dynamic range
- Fast measurements, independent of measured range or number of surfaces
- Excellent reproducibility results from operator to operator

Flexible
- Measures multiple surfaces simultaneously
- Measures a variety of material types
- Measures a wide range of surface finishes

Easy to Use
- Place the part and measure, little or no fixturing required
- Intuitive recipe driven operation
- Suitable for production, quality control, or development environments

Tropel® FlatMaster® MSP System Specifications

Performance

	FlatMaster MSP 40	FlatMaster MSP 150	FlatMaster MSP 300
Field of view	43 mm (1.7 in)	150 mm (5.9 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	0.04 mm (0.0016 in)	0.15 mm (0.006 in)	0.17 mm (.0006 in)
Measurement range (Z-Axis)	Up to 50 mm (2.0 in)	Up to 300 mm (11.8 in)	Up to 300 mm (11.8 in)

Measurement method	Frequency Scanning Interferometry
Measurement time	30 seconds typical
Measured data points	up to 3.1 million per measurement
Materials	Metals, glass, polymers, ceramics, and many others
Surfaces	Fine-ground, lapped, polished, super-finished and others

Accuracy and Repeatability

	Accuracy*	Repeatability*
Flatness	60 nm (2.4 µin)	20 nm (0.8 µin)
Parallelism	100 nm (4.0 µin)	25 nm (1.0 µin)
Depth/Height**	250 nm (10.0 µin)	100 nm (4.0 µin)

*Refers to instrument limited Accuracy and Repeatability (1σ) as based on measurement of traceable artifact
**Depth/Height

Tropel Metrology Software (TMS™)

Standard Parameters	Flatness, depth/height, parallelism, line profile, surface profile
User-defined Report Layouts	User-configurable including: OpenGL® 3-D, 2-D, line trace (X/Y, radial, circular), color contour, isometric, histogram, user-defined tolerances, pass/fail criteria
Data Management	Available in report layouts, also database, MicroSoft Excel®, 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	< 1.0 °C per hour
Vibration Isolation	Passive isolation included
Humidity	5% to 95% relative humidity, non-condensing
Power	100-240 VAC, 50/60 Hz, 4 Amp
Air/Vacuum	None required
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

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

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CAUTION
LASER RADIATION
DO NOT STARE
DIRECTLY INTO BEAM
Class I Laser Product - 830 nm

TROPEL®
METROLOGY INSTRUMENTS