



TopMap Family

Surface Metrology in a New Dimension
Product Brochure





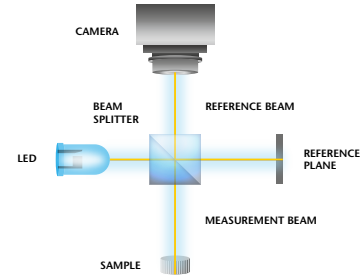
Quality Inspection of Precision Surfaces

In order to characterize precision-manufactured and other sophisticated surfaces, it needs measurement technology that is reliable, quick and application-oriented. Guaranteeing functionality and detecting defects at an early stage avoids unnecessary cost and increases the overall product quality and lifetime.

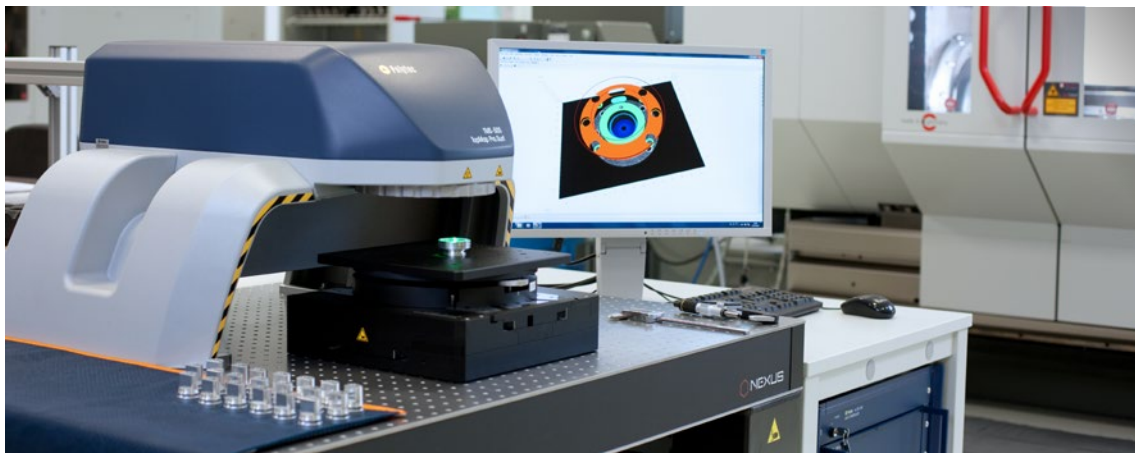
Polytec addresses surface metrology applications with innovative, high-precision, non-contact optical technology that works on rough, smooth and stepped surfaces. White-light interferometers of the TopMap family are established quality inspection tools for the controls laboratory, in production environments or in-line.

Areal Surface Measurement with White-light Interferometry

Structured functional surfaces with tight tolerances require high-precision measurement systems that can quickly scan the topography of a workpiece. Well-established white-light interferometry achieves a resolution at the nanometer scale.



Principle of scanning white-light interferometry (Michelson setup)



Why optical measurement?



- Non-contact, non-destructive and repeatable
- Full areal information in 3D – don't overlook any details
- On almost any surface
- Excellent lateral resolution
- Check manufacturing tolerances in a short time

Why TopMap white-light interferometry?

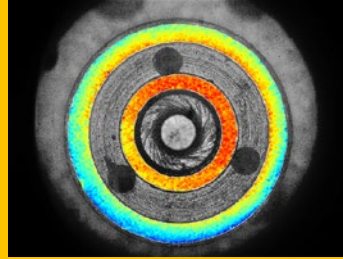


- Large field of view even without stitching
- Objective-free design avoids risk of collision
- Smart Surface Scanning Technology measures on almost any surface independent from reflectivity
- High precision and repeatability
- Easy to automate
- Excellent vertical resolution independent of objective magnification

Versatile Use

A wide range of applications

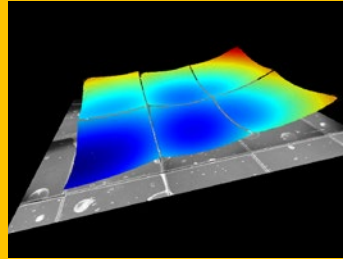
Polytec's TopMap surface measurement systems are in their element in all operations where the finest components and structures need to be inspected. Non-contact white-light interferometry allows measurements with a resolution in the nanometer or even subnanometer range. And it's for this very reason that Polytec's TopMap devices have become standard tools in the field of industrial quality control.



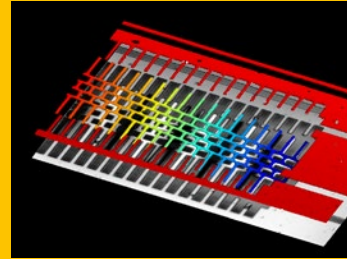
Sealing surfaces



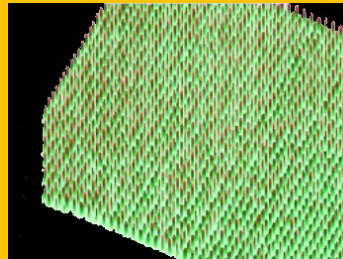
Form deviation



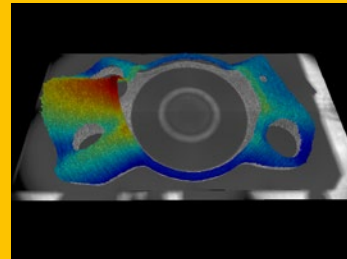
Warpage measurements



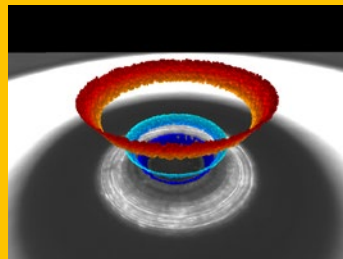
MEMS



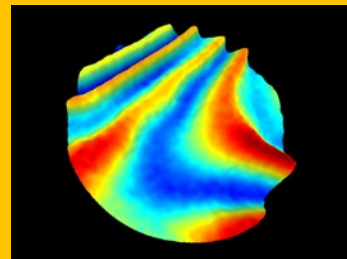
Solder bumps



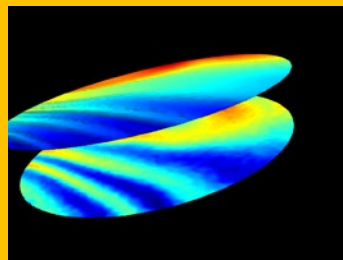
Pump barrel



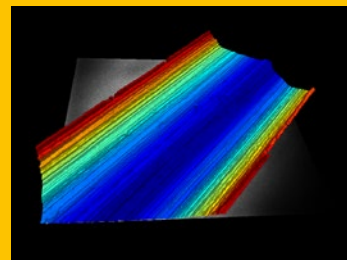
Cone measurement



Membrane measurement



Optical thickness



Tribology



Parallelism



Form parameter



Tribology



Roughness



Height & Steps

Check Manufacturing Tolerances Quickly

... with high precision, high repeatability and based on traceable standards.

With large vertical range and nanometer resolution, Polytec's TopMap systems are ideal for determining flatness, step-height and parallelism of large surfaces and structures, of a wide variety of materials.

TopMap Metro.Lab Compact 3D Workstation



The TMS-100 TopMap Metro.Lab from Polytec is a high-precision white-light interferometer (coherence scanning interferometer) with a large vertical measurement range. The TopMap Metro.Lab is ideally suited for non-contact measurement of flatness, step height and parallelism of large surfaces and structures even on soft or delicate materials.

The entry-level of white-light interferometry

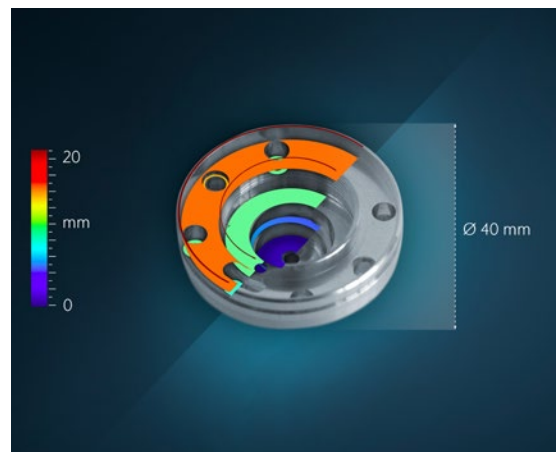
As a complete and compact 3D measurement workstation, the TopMap Metro.Lab allows the user to perform measurements with a large field-of-view and nanometer resolution.

Benefit from an open software architecture to program routine tasks or set up your very own user interface.

Highlights



- Fast measurement of large areas measuring up to approx. 80 x 80 mm²
- Reach deeply recessed surfaces like holes
- Easy-to-use and automated software with ISO compliant parameters
- Smart Surface Scanning Technology measures on almost any surface independent from reflectivity



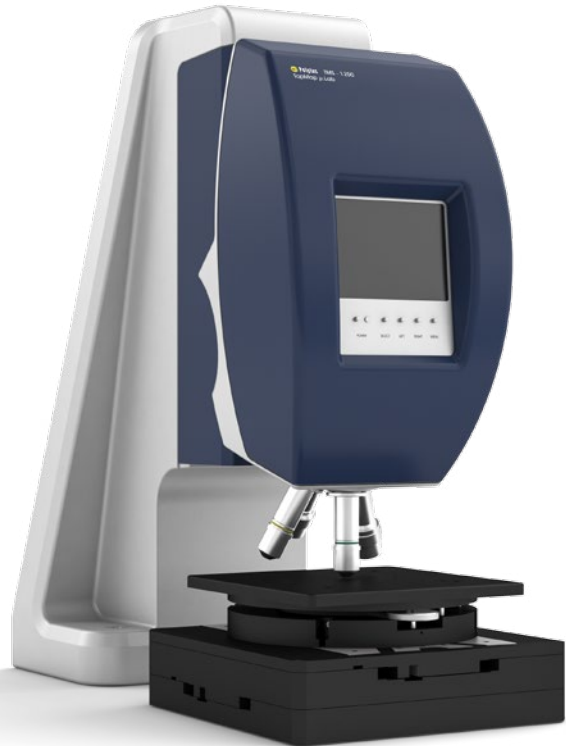
Quickly measure large areas and visualize in 3D

TopMap μ .Lab The Microscope System

With its high spatial resolution, the TMS-1200 TopMap μ .Lab measurement microscope sets new standards in non-contact topography measurement. The optical profilometer rapidly determines parameters such as texture, flatness and roughness on both fine and sensitive structures. The Polytec Smart Surface Scanning Technology greatly facilitates measurements on samples with different reflectivities.

Optical profilometer with nanometer resolution

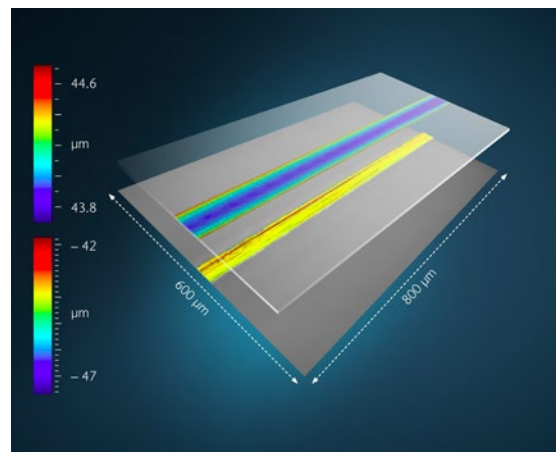
The TopMap μ .Lab measurement microscope supplies 3D data, determines film thickness and detects the finest defects using height profiles with nanometer resolution. The high z-resolution is independent from the chosen objective magnification. Choose from application-specific objectives or ask for a customized development, for longer working distances.



Highlights



- Analyze microstructures with excellent lateral resolution
- 3D topography, flatness, roughness and texture measurement
- Determination of film thickness and detection of surface defects
- Application-specific objectives for glass compensation and more
- 2D and 3D presentation modes with video image overlay



Detect roughness or even measure through glass with the optical profiler TopMap μ .Lab

TopMap In.Line For Production Integration



The TMS-350 TopMap In.Line is totally tailored to the needs of quality assurance in production, when cycle times are decisive and surfaces have to be measured precisely, without contact at a high speed.

Fast characterization in the production line

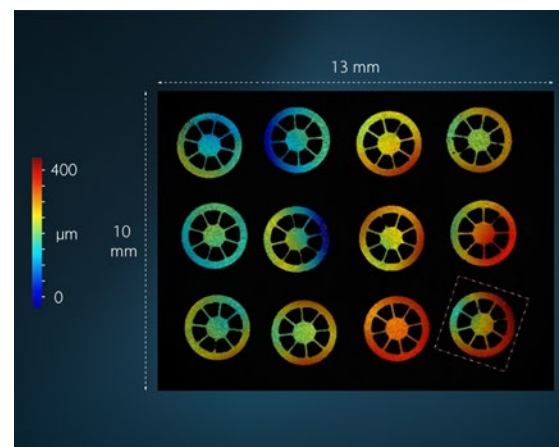
The compact design of the TopMap In.Line means it can be elegantly and safely integrated into the production line. Since no objectives are needed, collisions and damage to the optics or component surfaces are avoided. The system measures form deviations, such as flatness or waviness, reliably and with short cycle times. It measures without contact the exact step height even in deep holes with steep edges from a safe working distance thanks to the telecentric optical design.

The freely programmable measurement and analysis software can easily be adapted to the needs of your production workflow. Measurement data is exported to your proprietary database and the integrated QS-STAT™ export enables you to reliably analyze process data.

Highlights



- Fast non-contact measurement for short cycle times
- No risk of collision: easy integration in the production line with objective-free design
- Sensor head prepared for machine integration
- Easy to integrate, easy to automate, robust and low-maintenance
- Smart Surface Scanning Technology measures on almost any surface independent from reflectivity
- Integrated interface to customized databases and QS-STAT™



Save time measuring multiple samples in a single shot thanks to a large field of view and automatic sample detection.

TopMap Pro.Surf

The Surface Specialist


The TMS-500 TopMap Pro.Surf quickly, reliably and precisely determines form deviation. The TopMap Pro.Surf white-light interferometer is the ideal solution for non-contact surface topography measurement of precision-made surfaces – in the metrology lab, close to production or even right in the production line thanks to a robust design and a high level of repeatability.

For reliable checking of precision-made surfaces

Its high vertical and lateral resolution, the telecentric optical design and the high measurement speed open up many applications. Two million measurement points are recorded on a large 44 x 33 mm² measuring surface in a matter of seconds without any need for stitching – and the surface area can even be extended to 230 x 220 mm². With a 70 mm vertical measurement range and excellent vertical resolution, there is plenty of leeway for varying measuring tasks. The telecentric optics even measures in hard-to-reach areas, such as drill holes. Integrated machine vision tools speed up your quality control process. Detect several samples simultaneously without the need for a mechanical fixture.



Highlights

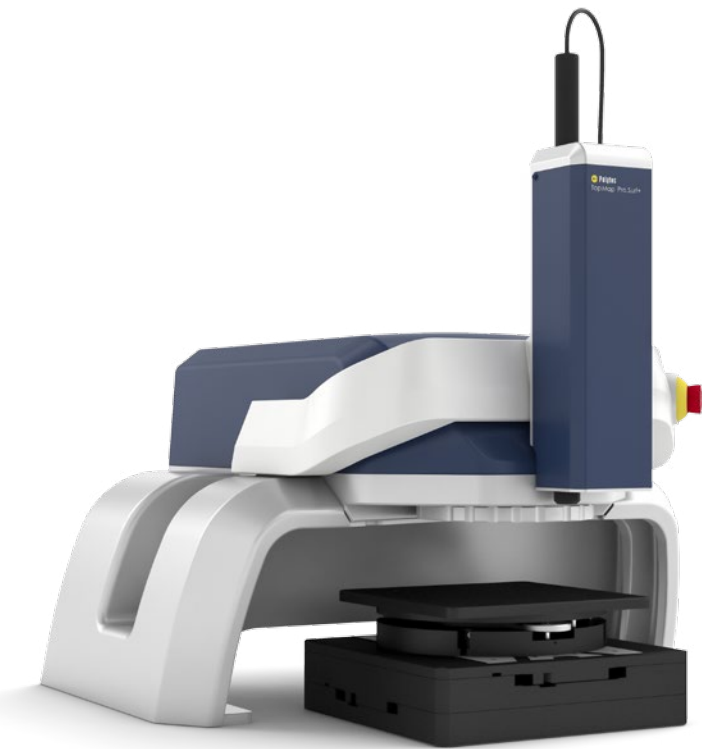
-  For large samples without stitching
- Large vertical scan range of 70 mm
- Telecentric optics measures even hard-to-reach areas like holes
- Smart Surface Scanning Technology measures on almost any surface independent from reflectivity
- Automatic sample recognition avoids mechanical fixture
- Designed for in-line quality control



Measure in hard-to-reach areas like holes with a special optical design and an astonishing 70 mm vertical scan range.

TopMap Pro.Surf+

The All-In-One System



The TMS-500-R TopMap Pro.Surf+ conveniently determines form both deviation and roughness in one single system – fast, reliable and precise. The upgrade of the high-end system TopMap Pro.Surf represents an all-in-one solution – thanks to the integrated roughness sensor.

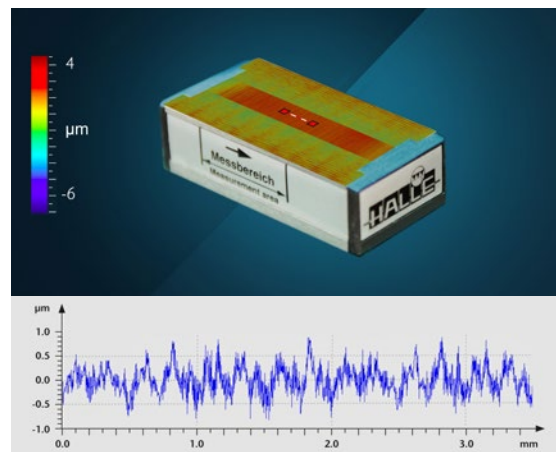
Combined measurement of form deviation plus roughness

TopMap Pro.Surf+ offers a powerful multisensor solution to characterize surface topography by precisely determining both form parameters such as flatness, step height, parallelism and roughness parameters. Besides its intelligent multisensor concept the user will benefit from the high vertical and lateral resolution of the instrument, from its telecentric optical design and from the very fast measurement. Two million measurement points are recorded on a large $43 \times 32 \text{ mm}^2$ measuring surface in a matter of seconds without the need for stitching – and the surface area can even be extended to $230 \times 220 \text{ mm}^2$. Integrated machine vision tools speed up your quality control process. Detect several samples with a single measurement without the need for mechanical fixtures.

Highlights



- Quick and precise 3D surface characterization plus roughness measurement
- For large samples without stitching
- Telecentric optics measures even hard-to-reach, low-lying areas like holes
- All-in-one system does not overlook any details
- Safe sample handling thanks to a long working distance
- Automatic sample recognition without need for mechanical fixture



Measure both form parameters of large samples and roughness with just one system.

Tailored to Your Needs

Besides optical measurement instruments, Polytec offers a number of software options, application-oriented accessories and customizing options making it your very own TopMap system tailored to your needs.



Software

The smart software helps to speed up your quality control process, saving and loading routine measurement programs and providing individual configurations for each user and application, where it is necessary. Thanks to automated sample detection and a large field of view, you measure multiple samples simultaneously without the need of mechanical fixture.



Customizing solutions

Polytec not only offers turn-key solutions but also individually customized hardware and software solutions based on your specific needs. For example optional glas compensation to measure through transparent materials.



Measurement service and on-site support

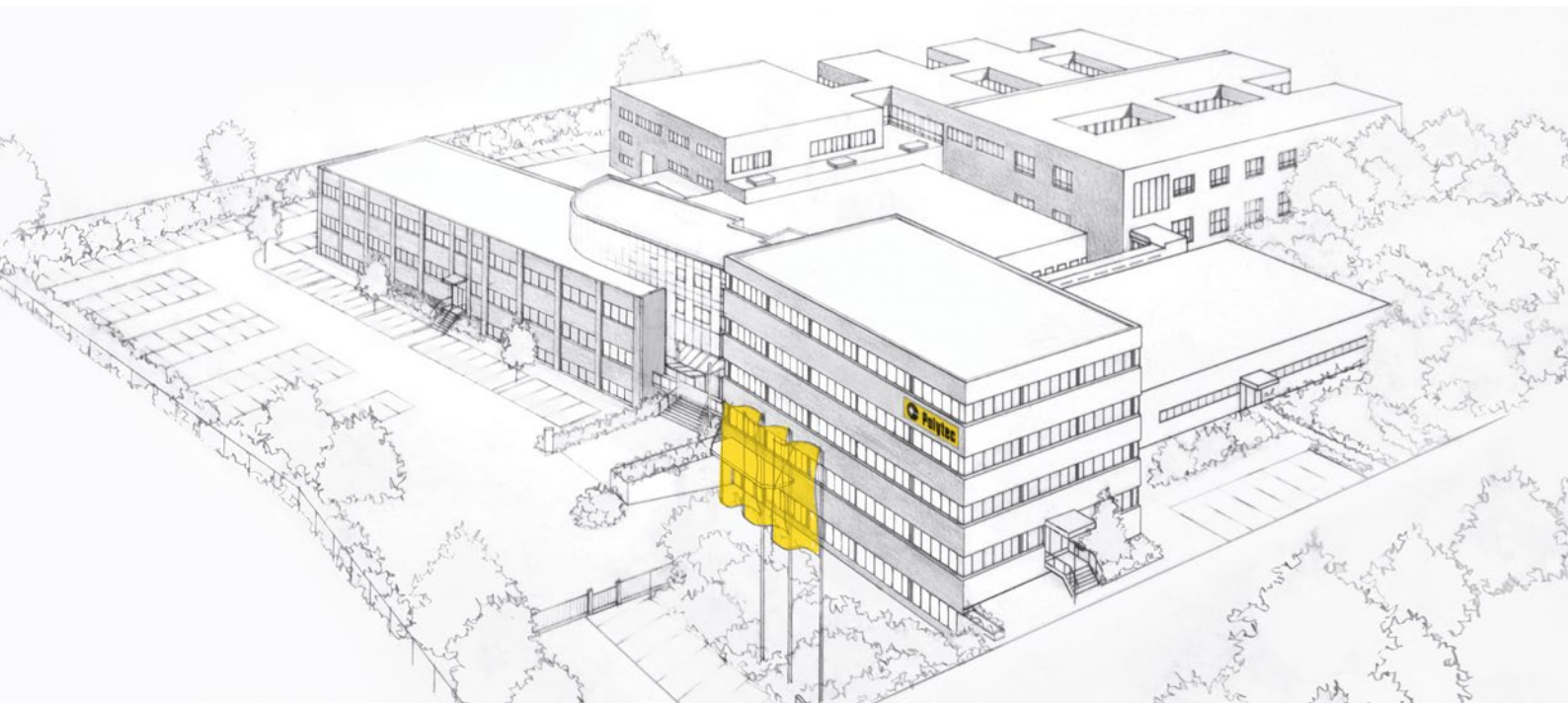
Our PolyXperts are pleased to help you with your individual measurement tasks – we support you with feasibility studies, training, measurements to order – or directly on your site. Our preventive maintenance program offers you a maximum of reliability and safety.

More information: www.polyxpert-services.com



Customized solutions for in-line measurement (with integrated bar code scanner and automated sample detection)





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