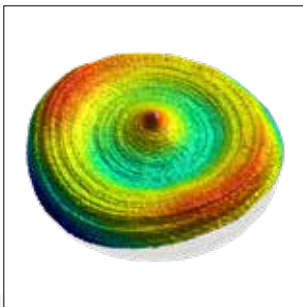


LUPHOSCAN 50 SL

The world's fastest and most accurate system,
for non-contact 3D cellphone lens metrology



LUPHOSCAN 50 SL

Ultra fast, non-contact, 3D form measurement

Measure cellphone lenses in <60 seconds

Based on the industry standard LUPHOScan platform

Introducing the LUPHOScan SL with new probe technology for increased measurement flexibility and ultra fast measurement times down to < 60 seconds.

The LUPHOScan SL is ideal for high volume production of small lenses with key benefits of the system including ultra fast measurement speeds and the ability to measure geometric lens features.

Unique benefits for both design and production.

- **Ultra high, repeatable accuracy**
 $\leq 30 \text{ nm PV } (3\sigma)$
- **Best available stability**
Power variation $< \pm 15 \text{ nm } (3\sigma)$,
PV variation $< \pm 1.5 \text{ nm } (3\sigma)$
- **Analyse geometric features**
Such as interlocks and edge diameters in relation to each other or the optical surface
- **Thin transparent substrates**
Down to $100 \mu\text{m}$ thickness
- **Fast measurement speeds for true 3D**
< 120 sec. - Optical surface and geometric features*
< 60 sec. - Optical surface only**

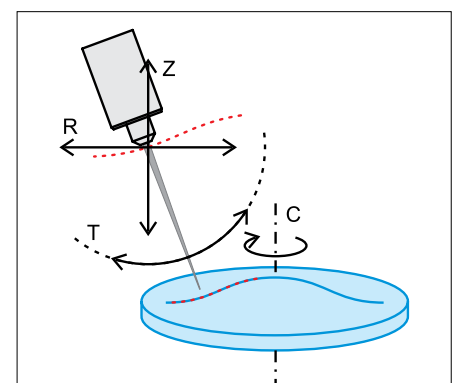


Measurement principle

During measurement the probe performs a spiral scan over the entire surface of the object under test and produces high density 3D data.

Scanning is achieved by rotating the object by means of an air-bearing spindle whilst the sensor is moved radially and axially using linear stages.

A rotary stage keeps the sensor normal to the object surface. The layout of movement stages provides high flexibility, even for uncommon surface shapes including steep slopes or profiles with points of inflection.



Movement of the LUPHOScan object sensor

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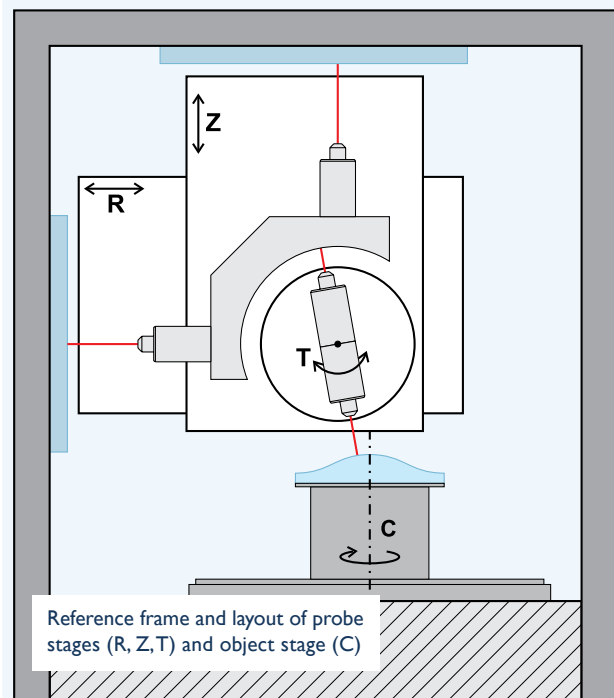
Advanced capability delivers world's fastest
measurement of 3D surface and interlocks

< 120 sec. cycle time

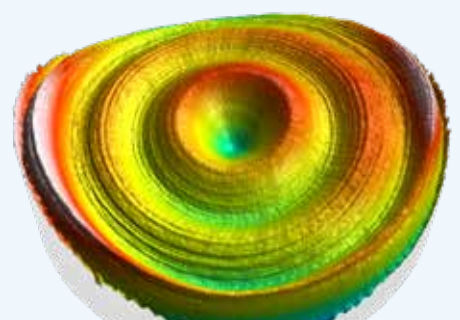
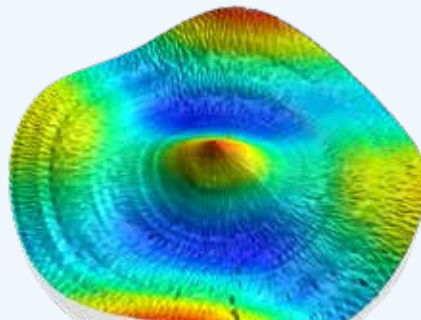
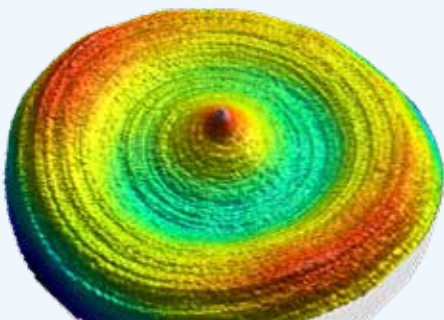
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New 7.5 mm working distance prevents collision



Reference frame and layout of probe stages (R, Z, T) and object stage (C)



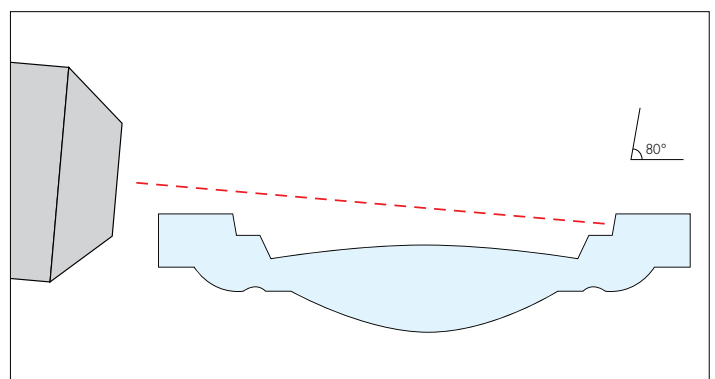
Improve quality and yield with real full 3D measurement results showing true form errors

Optimised LUPHOScan probe

The new probe technology used on the LUPHOScan SL adds additional benefits including an increased working distance of 7.5 mm.

This enables complex geometric features on lens moulds and moulded lenses to be measured, such as:

- Access to measure interlocks without collision between the probe and substrate.
- Increased access to steep concave optical surfaces

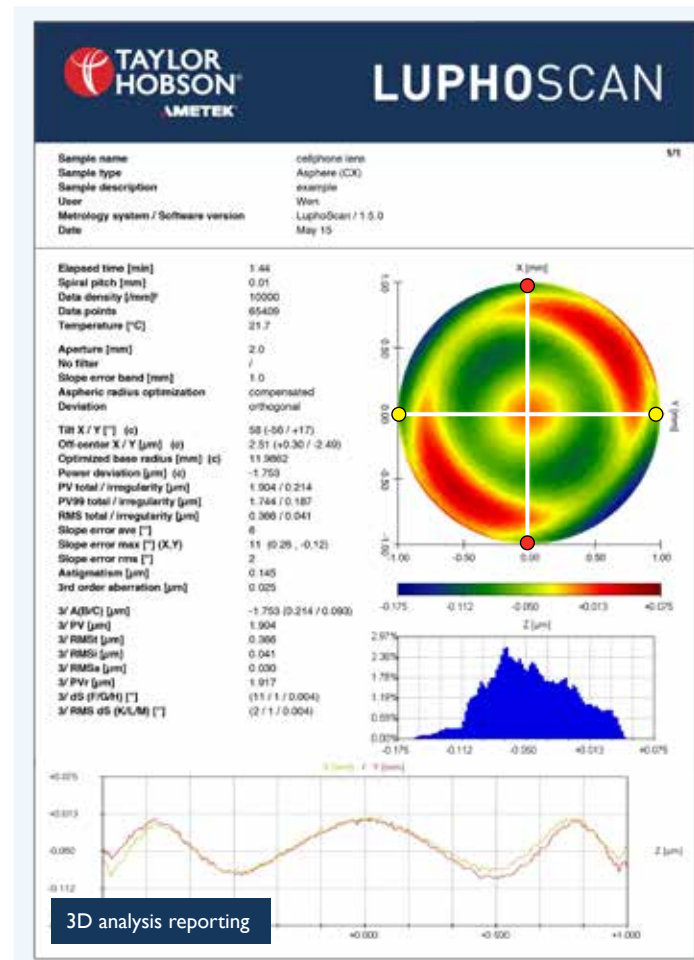
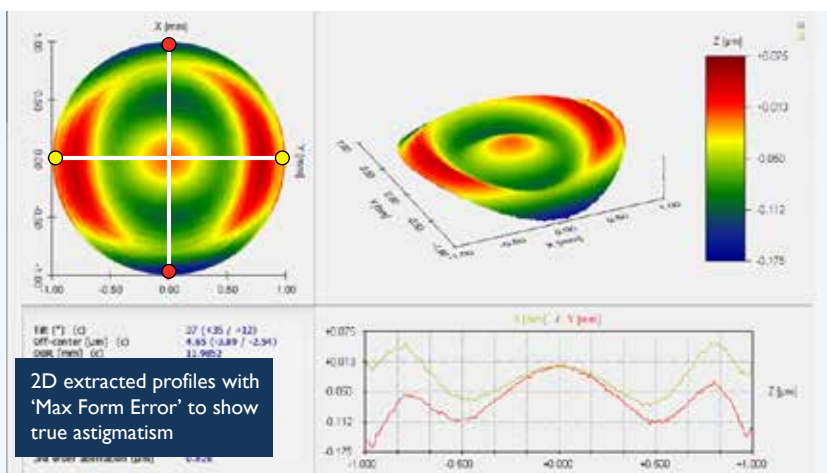
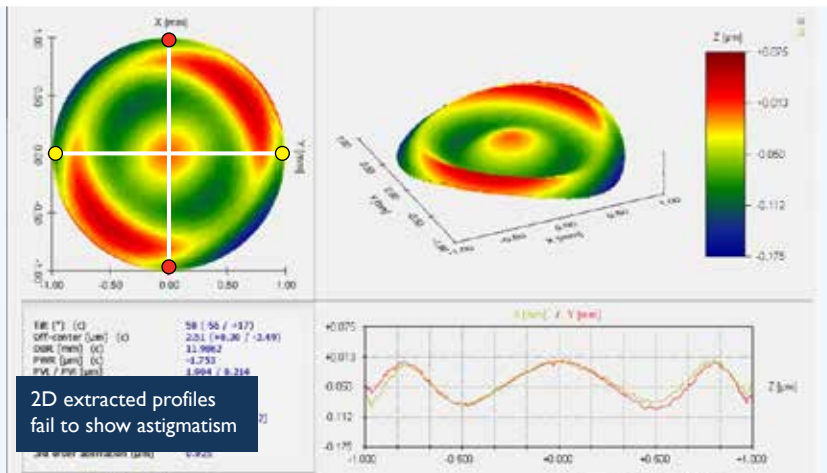


Improve measurements of interlocks without collision

Lens form metrology

Increased yield and quality with true 3D accuracy

3D measurement & analysis in < 60 seconds



Fully automated analysis options for professional reporting.

2D extracted profiles with 'Max Form Error' feature.

Form error results can be automatically optimised to output the maximum form error present on a part.

Only true 3D measurements can provide this level of form error information.

The example shown identifies that the same 3D form error can yield two completely different 2D form errors.

3D measurement with 3D surfaces for in-depth reporting.

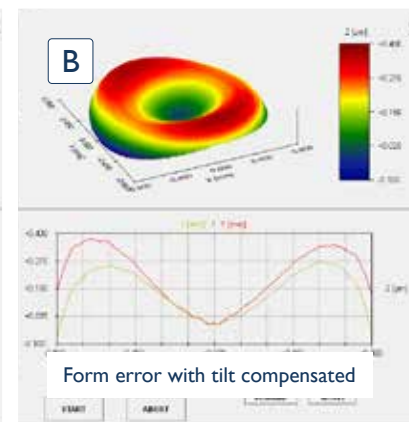
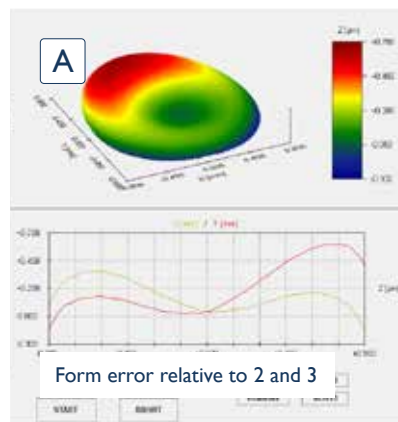
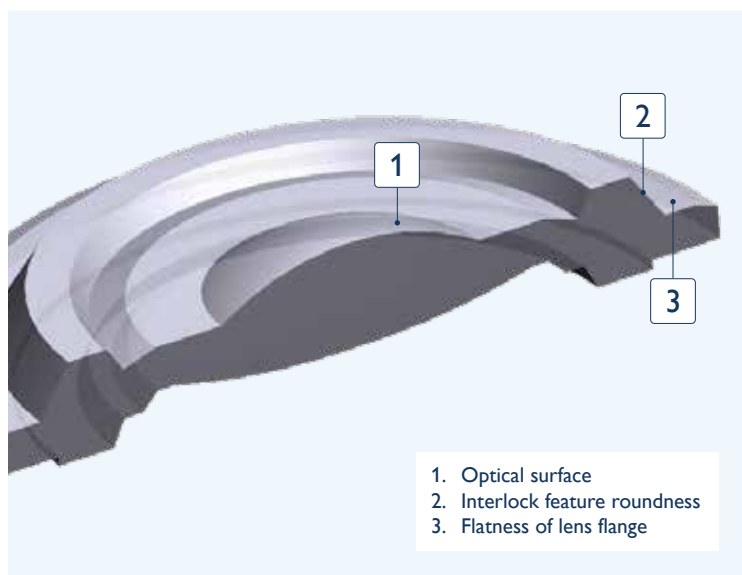
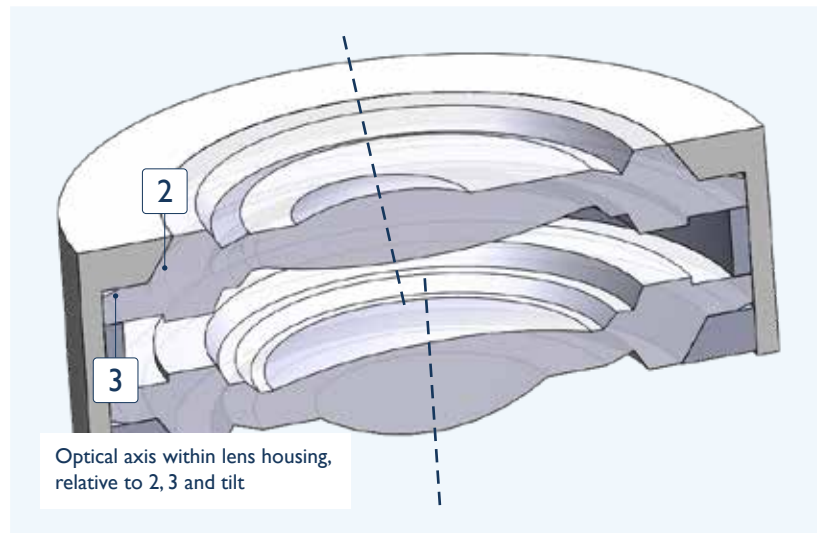
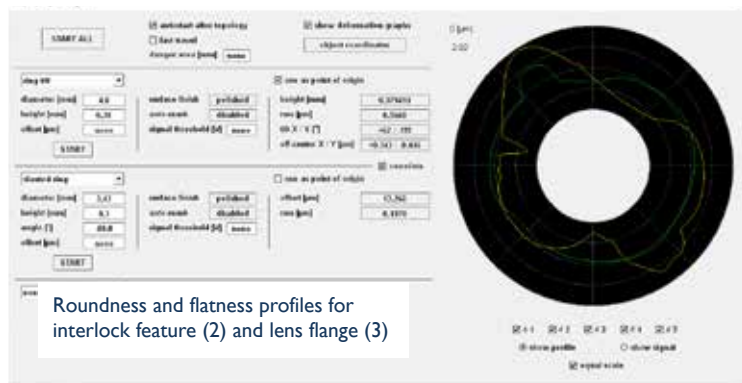
Measurement results can be output showing the complete surface form error with the 3D option, including extracted 2D profiles.

- ISO compliant analysis results (ISO 10110).
- Auto export results for quality control and traceability.
- Export 3D measured surface in common formats for process improvement.
- Set pass/fail criteria for easy process control.

Advanced lens metrology

Increased productivity with world's fastest measurement

3D optical surface & interlocks in < 120 seconds



Fast measurement and analysis of the optical surface and geometrical features.

Measure the optical surface and geometrical features such as interlock surface roundness, flatness of the flat lens surface and location of the optical surface relative to these features.

Optical surface is off centre and tilted relative to the interlock feature position and lens flange.

The analysed results (A) show the lens form error of the optical surface relative to the interlock and lens flange.

The results highlight the real form error which would be seen if the lens had been put into an assembly and aligned relative to these features.

The optical surface (B) shows the tilt compensated form error.



Typical cellphone lens assembly

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- **Precision Manufacturing** – Contract machining services for high precision applications and industries.

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Measurement of your parts is carried out by skilled technicians using industry leading instruments in accord with ISO standards.

- **Metrology Training** – Practical, hands-on training courses for roundness and surface finish conducted by experienced metrologists.
- **Operator Training** – On-site instruction will lead to greater proficiency and higher productivity.
- **UKAS Calibration & Testing** – Certification for artifacts or instruments in our laboratory or at customer's site.



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