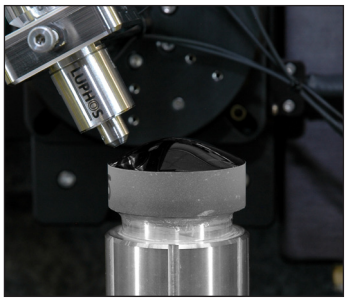
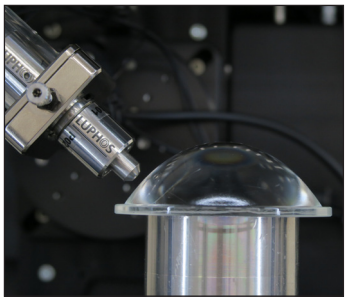
TAYLOR HOBSON®

LUPHOS
Light matters

LUPHOScan 260 HD

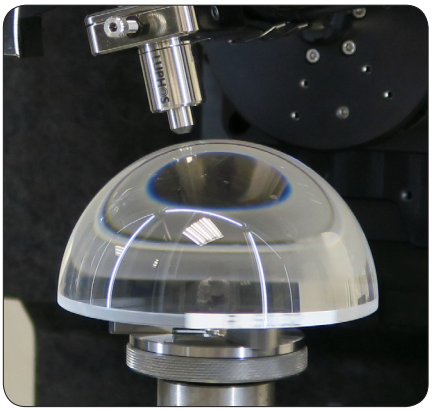
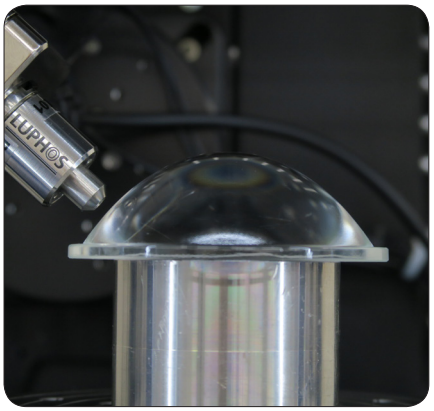
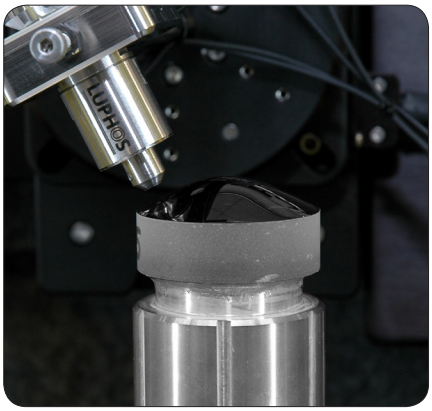
Ultra-precision non-contact 3D form measurement of aspheric surfaces





High definition optical metrology

AMETEK®
ULTRA PRECISION TECHNOLOGIES

LuphoScan platforms are scanning interferometers based on an optical (non-contact) point probe that utilizes MWLI® technology (multi-wavelength interferometry).

Technology

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.

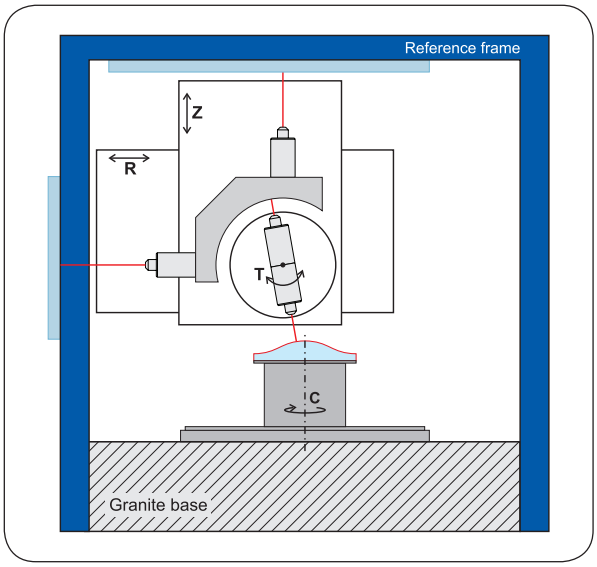
Based on the absolute measurement capability of the employed MWLI® sensor technology the metrology instruments also allow inspection of discontinuous optics such as segmented surfaces, annular lenses, asphero-diffractive lenses, and axicons. In addition, the LuphoSwap extension enables the determination of lens thickness, and wedge and decenter errors. Its software can also be utilized to analyze (fully automated) the positioning of an optical surface with regard to user-defined reference surfaces, such as the lens perimeter, any lens mount, or the barrel of molds.

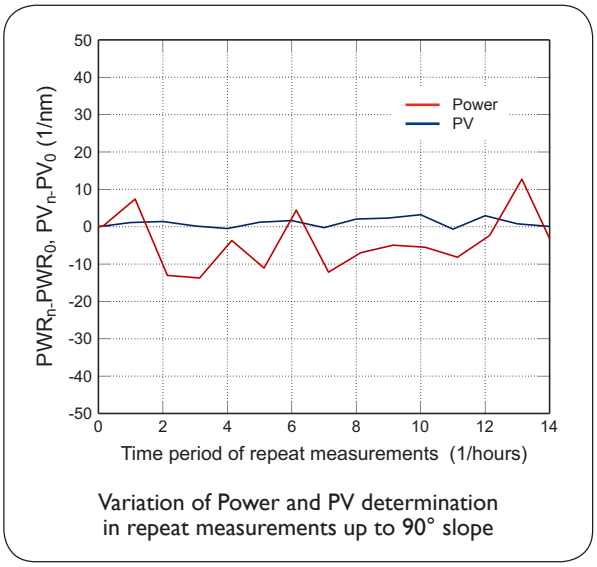
Accuracy

LuphoScan platforms provide an outstanding level of form measurement accuracy. It is achieved by a unique reference frame concept and a sophisticated arrangement of referencing sensors that follows the Abbe principle.

In LuphoScan 260 HD platforms, the concept has been optimized with a new choice of materials, improved sensor control, the inclusion of ambient conditions in real time and advanced calibration capability. In this way, HD systems provide an absolute measurement accuracy of better than ±50 nm (3σ) up to 90°. Furthermore, in particular the reproducibility of measurements results and the noise floor have been greatly improved.

The below graph shows a sample of the variation of the determined Power and PV errors of a calibration ball (D = 25 mm) in repeat measurements up to 90°. Over a measurement period of 14 hours the variation of Power and PV remained less than ±15 nm and ±5 nm, respectively.





Variation of Power and PV determination in repeat measurements up to 90° slope

TAYLOR HOBSON®

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The metrology experts

Taylor Hobson is world renowned as a manufacturer of precision measuring instruments used for inspection in research and production facilities. Our equipment performs at nanometric levels of resolution and accuracy.

To complement our precision manufacturing capability we also offer a host of metrology support services to provide our customers with complete solutions to their measuring needs and total confidence in their results.

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