

CCI UHS

Combining ultra high speed with high data quality



CCI UHS: Non-contact 3D optical profiler

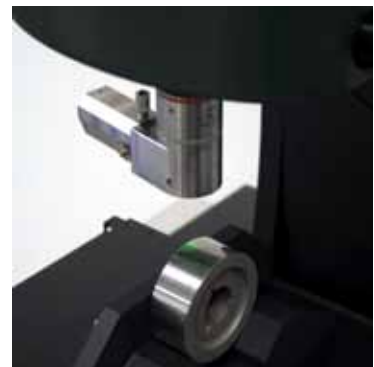


Maximise your metrology capability

- High speed measurement
- 1024 x 1024 pixel array for large FOV with high resolution
- 2.2 mm vertical range with closed loop piezoless Z axis scanner
- AutoStitch as standard, measures large parts at high resolution

Industry leading data quality

- 0.1 ångstrom resolution over the entire measurement range
- <0.2 ångstrom RMS repeatability, <0.06% step height repeatability
- Unique piezoless Z axis scanner for improved form measurement
- Claritas 20 light conditioning, increased angle sensitivity improves data quality



Robust design ensures low cost of ownership

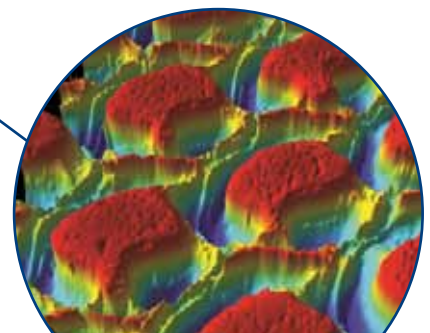
- Piezoless Z axis scanner eliminates expensive repair bills
- Automatic surface detection prevents crash damage to lens
- XL option for larger parts without loss of data quality
- Ease of operation reduces the possibility of user error

Windows® 7 (64-bit) software

- Multi-language support including Chinese and Japanese
- Advanced 64-bit AutoStitch offers fast stitching over large areas
- New tools including 4D analysis of 3D surfaces as they evolve over time
- Automatic report generation based on batches of measurement data

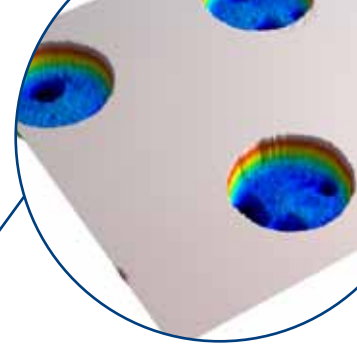
Understanding structured surfaces

High speed, large field of view and high resolution are all critical for measuring structured surfaces.



Laptop diffuser optimization

Controlling the uniformity of the pits improves the display quality. High speed measurement allows efficient process control of the diffuser manufacture.



Unlimited application possibilities

Three elements of surfaces – dimension, form and texture – are critical to the function of a component. Exceptional roughness capability coupled with large area measurement, advanced data analysis (2D and 3D) and Taylor Hobson's expertise provides industry leading metrology.

Many users look at data from the CCI UHS for controlling surface features that other instruments simply cannot handle. With outstanding range, resolution and ease of operation, the CCI UHS can easily become your ideal tool for process control, quality assurance and R&D. Applications include:

- Material research
- Bearing roughness
- Polished optics
- Textured steel
- Diamond turned surfaces
- Automotive injectors
- Structured surfaces
- Medical implants
- Sealing surfaces
- Crankshaft finish
- Fluid retention (bearing ratio)
- Paper / toner
- Phone handset finish
- Tooth wear
- SIMS craters
- Wafer roughness
- Wafer etch depth
- Solar cells
- LEDs
- MEMS
- Data storage



Ball bearings



IOL lens



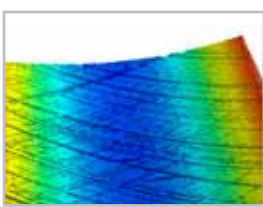
Crankshafts



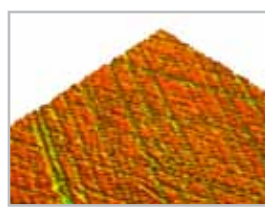
The CCI UHS XL is optimized for the measurement of large components without compromising the resolution

CCI UHS offers a wide range of advanced analysis

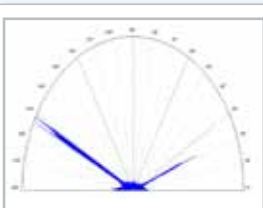
Measurement of honed surface



3D honed surface



Form removed surface



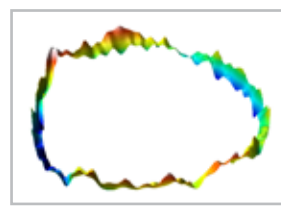
Texture direction

ISO 25178		
Height Parameters		
Sq	6.94	µm Root mean square height
Ssk	0.638	Skewness
Sku	2.23	Kurtosis
Sp	20.1	Maximum peak height
Sv	14.1	Maximum pit height
Sz	31.8	Maximum height
Sa	6.04	Ambrosio mean height

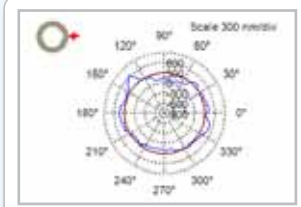
Surface parameters

High lateral resolution over large areas is perfect for 3D texture direction analysis. A combination of fine detail and advanced analysis offers critical assessment of advanced engineered surfaces.

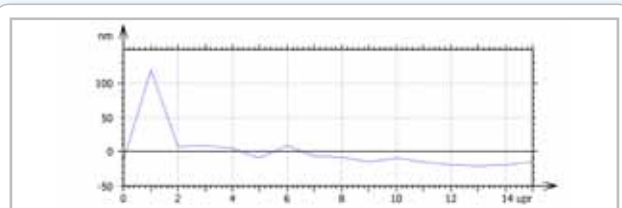
Harmonics analysis



3D image of sealing surface



2D profile of sealing surface



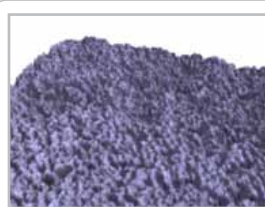
Harmonics analysis of 2D profile

Harmonics analysis is often used to identify problems with sealing surfaces. Profile extraction of the 3D measurement can be used to identify any potential sealing issues.

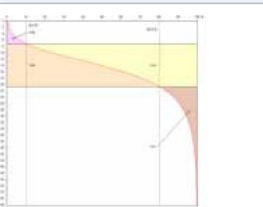
Fluid retention



Ball bearing surface



Form removed surface



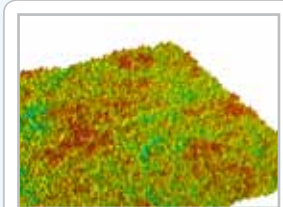
Bearing ratio analysis

Many engineering surfaces are designed to encourage fluid retention. The bearing ratio of the surface is used to optimize the number and shape of pits, optimizing performance.

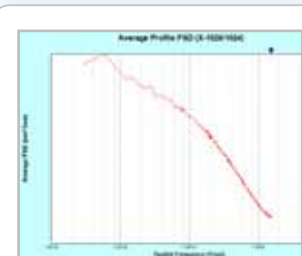
ISO 25178		
Functional Parameters (Volume)		
Vm	0.000237	µm³/µm² p = 101
Vv	0.00864	µm³/µm² p = 101
Vmp	0.000237	µm³/µm² p = 101
Vmc	0.00635	µm³/µm² p = 101
Vvc	0.0072	µm³/µm² p = 101
Vvv	0.00144	µm³/µm² p = 801

Controlling surface roughness

ISO 25178		
Height Parameters		
Sq	1.22	nm Root mean square height
Ssk	0.0301	Skewness
Sku	3.10	Kurtosis
Sp	5.88	Maximum peak height
Sv	7.85	Maximum pit height
Sz	13.7	Maximum height
Sa	0.970	Ambrosio mean height



Silicon surfaces



Average profile PSD

CCI is ideal for looking at the roughness of very smooth surfaces. PSD analysis can be used to identify any issues in silicon wafer polishing.

Unrivalled application possibilities

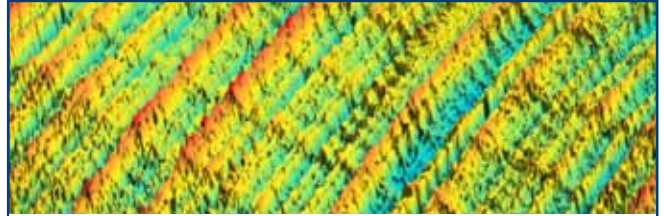
CCI single measurement mode gives unbeatable range resolution and accuracy

Injector flatness



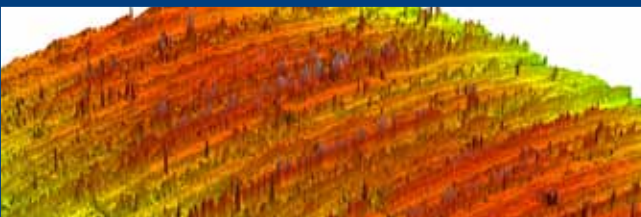
CCI is ideal for looking at diesel injector assemblies. The large field of view and high data density allow the flatness and dimensions of the component to be measured and therefore controlled. The high measurement speed makes it ideal for production environments.

Diamond turned surfaces



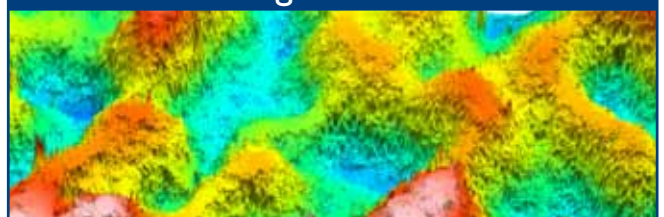
Faults such as tool height errors can be identified and rectified. Roughness and waviness analysis tools for cutting performance evaluation and feedback (chatter, spoke, color, etc) will optimise optical performance. Advanced PSD and slope-error tools are ideal for diagnostic evaluation of frequency errors.

Curved surfaces



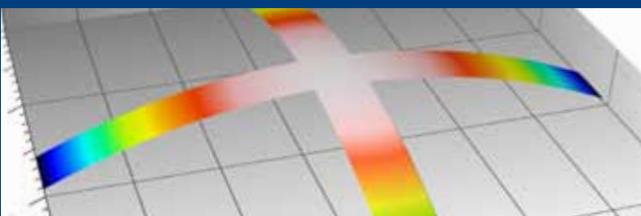
Curved surfaces such as cams and crankshaft pins can be slow to measure because of the curvature of the surface. The high speed and high resolution of the CCI UHS improves measurement throughput while ensuring tight process control.

Rough surfaces



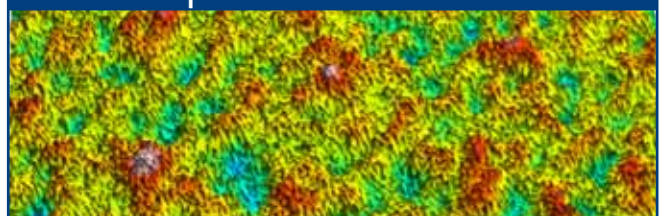
Because rough surfaces scatter light they are often difficult to measure. The unique CCI algorithm, and high sensitivity camera gives less missing data than any of our leading competitors while measuring at high speed.

Lens measurement



CCI is ideal for the measurement of both the form and roughness of shallow lenses. It is capable of measuring the radius with an accuracy of better than 0.05%

Super smooth surfaces



CCI UHS is able to scan at high speed while still maintaining industry leading performance. The high resolution enables tighter tolerances, improving process control. Measurement of sub ångstrom roughness with very high throughput is now possible.

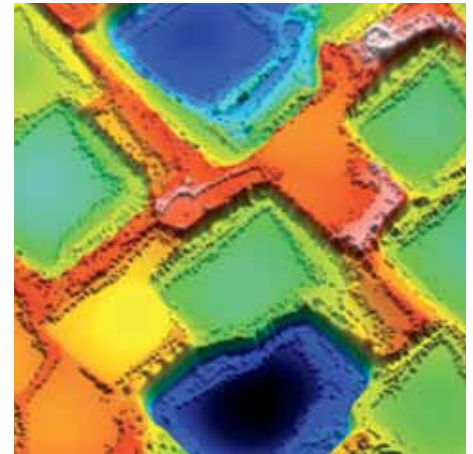
Next generation 3D camera technology

Higher resolution

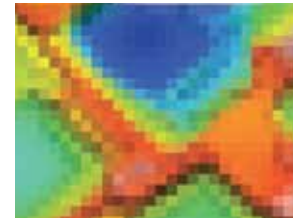
CCI UHS image sensors with high speed 1024 x 1024 pixel arrays are vastly superior to old VGA video camera technology where 640 x 480 pixel arrays grossly limit lateral resolution. Now you can measure large areas without the complexity or potential distortion caused by field of view multipliers.

Faster measurements

A high speed sensor and larger field of view (FOV) means better utilization of equipment and operators. Cost effectiveness is much improved now that you can inspect more parts more thoroughly and in greater detail without additional expense.



CCI UHS 1024 x 1024



Last century 640 x 480

21st century optical profiling

One measurement mode

Streamline your inspection program by eliminating multiple inspection routines and incompatible measurement reports. Our patented Coherence Correlation algorithm provides sub-ångstrom resolution regardless of scanning range so that all surfaces at any stage in production can be measured on the same instrument and directly compared.

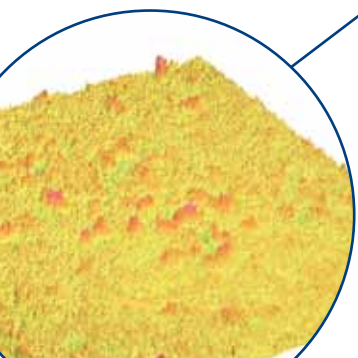
Improved sensitivity

The Claritas 20 light conditioning offers unrivalled data quality. Increased sensitivity provides less missing data on hard to measure surfaces and an increase in maximum angle capability, improving data quality and opening up new exciting application opportunities.



Grinding wheel roughness

Difficult to measure rough surfaces need the high resolution capability of the CCI UHS. High speed measurement and stitching will improve the analysis by looking at larger areas.

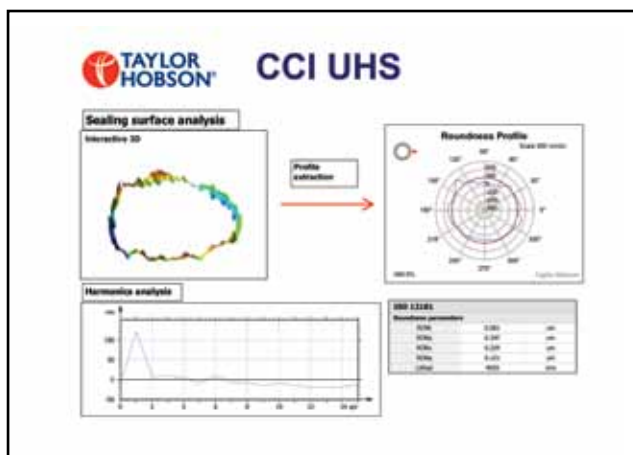


Powerful new software features

Control software

Now with 64 bit processing, the CCI control software features greater flexibility, faster operating speed and improved overall performance. Compatibility with most mainstream platforms offers the possibility of collaborative research projects and development of advanced applications.

Multi-language support is now available to keep pace with the global economy and international manufacturing partnerships.



Flexible, user-friendly, all-inclusive software

The latest generation of TalyMap software assures conformity with the latest 3D standard, ISO 25178, as well as full metrological traceability. New analytical functions include 4D analysis of 3D surfaces as they evolve over time, pressure or other physical properties. Along with photo-realistic full colour images, TalyMap also includes enhanced productivity tools such as templates for repetitive work and automatic report generation based on batches of measurement data.

Research facilities, factories and universities worldwide have made TalyMap their preferred surface analysis software. It is used for product development, process improvement, predictive behaviour analysis and routine inspection in many sectors. TalyMap is continuously evolved by a multi-disciplinary team of specialists in metrology, software engineering and automation in order to meet present and future surface metrology needs.

Key features

Full metrological traceability	New analysis workflow enables step traceability in an analysis document. New steps can be added, fine-tuned or deleted at any time.
Statistics for quality control	New statistics option makes it possible to track and generate statistics on parameters across multiple measurement data sets.
Multi-language support	TalyMap can be configured to work in one of six European languages, Japanese, Chinese, Korean or Brazilian Portuguese.
Quick results	Minidoc function significantly speeds up report preparation by creating shortcuts to common sequences
Customization	Add company logos, measurement identity cards, screen notes and illustrations including bitmaps, text blocks and arrows.
Advanced modules	TalyMap advanced modules enhance functionality by providing additional analysis or presentation capabilities.

Serving a global market

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.

Contracted services from Taylor Hobson

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practical, hands-on training courses for roundness and surface finish conducted by experienced metrologists
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on-site instruction will lead to greater proficiency and higher productivity
- **UKAS calibration and testing**
certification for artifacts or instruments in our laboratory or at customer's site



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