TAYLOR HOBSON®

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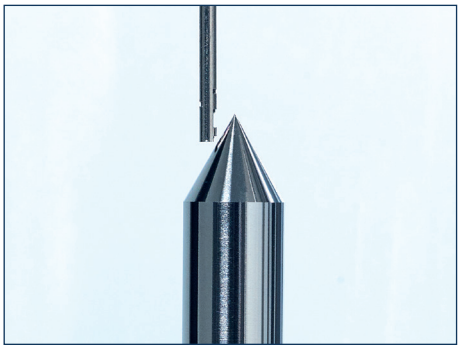
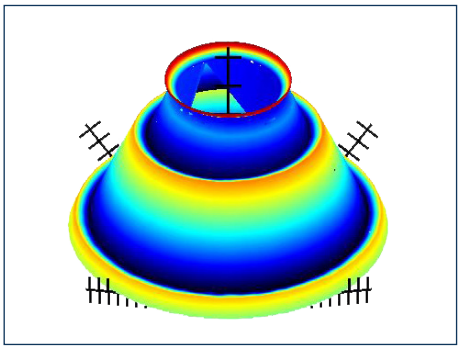
ULTRA PRECISION TECHNOLOGIES

TALYScan 280





Non-contact, optical 3D form measuring system

powered by | LUPHOSpot TECHNOLOGY

TALYScan 280

Non-contact, Optical 3D form measuring system.
Fast, accurate and designed for the shop floor.

Introducing the TALYScan 280, a new non-contact system for fast 3D measurements.

The TALYScan 280 is the ideal instrument for the inspection of roundness, straightness, parallelism, taper, roughness and diameter, all from a single full 3D scan.

The system is designed to deliver high accuracy measurements of injectors, hydraulic components, lens barrels, roller bearings, precision bores, precision and thin walled cylinders.

The TALYScan 280 is easy to setup and program with powerful, intuitive and user-friendly software.

With the ability to analyse 10,000 data points per second and up to 9 million data points in one scan, the TALYScan 280 produces unparalleled high definition measurement data.

System shown
Standard 9 µm optical probe, up to 200 rpm air bearing spindle, 65 mm arm & 200 mm column

Designed for fast measurement on the production line.

Powered by LUPHOSpot technology.

The TALYScan 280 can be supplied with various different optical probes to support specific applications and measurement requirements.

Applications close to the production line require a quick measurement and simplified analysis process to support a high throughput of parts.

The TALYScan 280 meets these requirements through the use of easy-to-use software and measurement speeds up to 200 rpm.

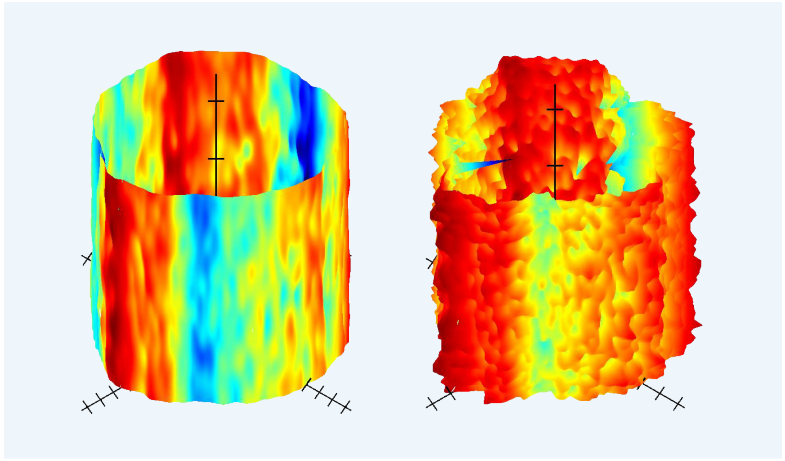
Supporting next-generation manufacturing.

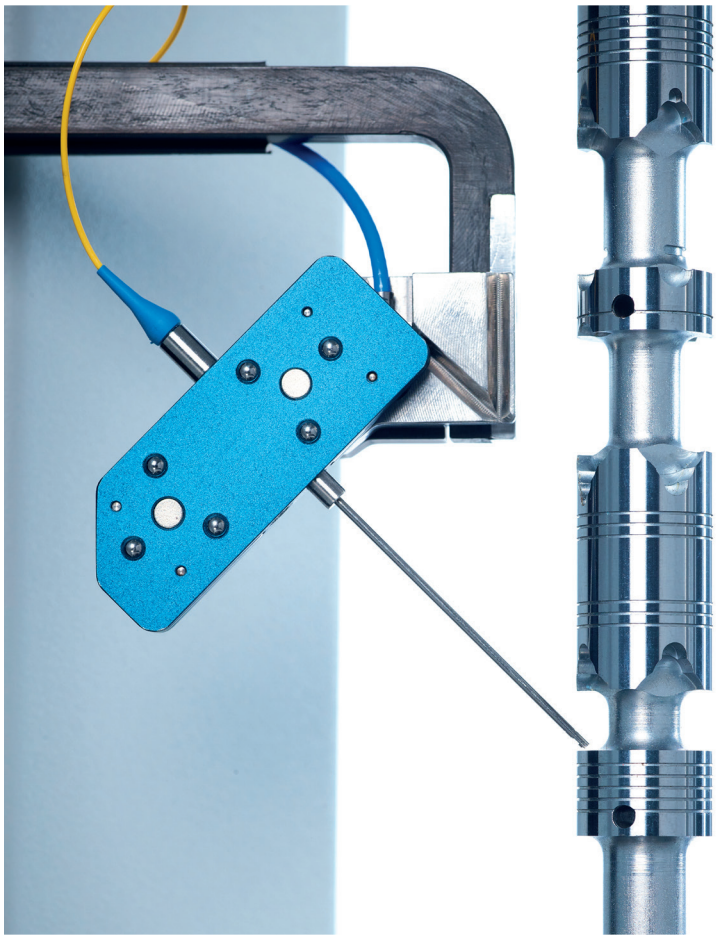
A new measurement technique to support modern design.

Manufactured components are required to have high levels of quality, durability, precision and reliability in order to meet the demanding requirements of modern applications.

The LUPHOSpot probe is capable of measuring a variety of materials and machined surfaces.

- Metal
- Glass
- Plastics
- Ceramics
- Ground, turned & polished surfaces





Wide range of measurements to suit your application.

Meeting daily measurement challenges.

TALYScan 280 delivers an in-depth understanding of characteristics which provide vital feedback for improvements in design and production.

- Roundness
- Flatness (2D & 3D)
- Roughness
- Diameter
- Straightness
- Interrupted surfaces
- Parallelism
- 3D cone & cylinder

Fully automated and fast.

System benefits.

- Access into small diameters (down to 125 µm).
- High-precision cylinder, angle and form measurement on rotationally symmetric parts.
- Roundness, straightness, parallelism, cone angle extracted from 3D measurement.
- Simultaneous form and surface measurement.
- Measurement of fragile or sensitive surfaces.
- Automatic alignment of parts to the spindle axis.
- Fast measurement of interrupted surfaces.

TALYScan 280

Robust, automated and easy to use.
Designed with the operator in mind.

High speed with no loss of surface detail.

Surface finish and form measurement in one scan.

The non-contact probe utilises short coherence heterodyne interferometry, measuring changes in distance with a resolution down to the nanometer level.

High speed measurement with speeds up to 200 rpm deliver high throughput of parts.

TALYScan 280 software handles large amounts of data with 9 million data points in one scan.

Powerful 3D analysis enables the operator to view surface features and defects in greater detail as never seen before.

LUPHOSpot probe safety features

- Breakaway 3-point connection probe.
- Magnetic contact that protects sensitive probes from accidental damage.
- Capacitive sensor, detecting displacement of probe in case of collision.

LUPHOSpot probe specifications.

- 10,000 data points per second (10 kHz)
- Gauge range: ± 50 µm
- Working distance: 500 µm
- Resolution: 1 nm
- Spot size: 9 µm
- Angle of acceptance: ± 2°
- Rough surfaces: up to Rz max. 10 µm

System features - Results you can trust

1 Active air damping.

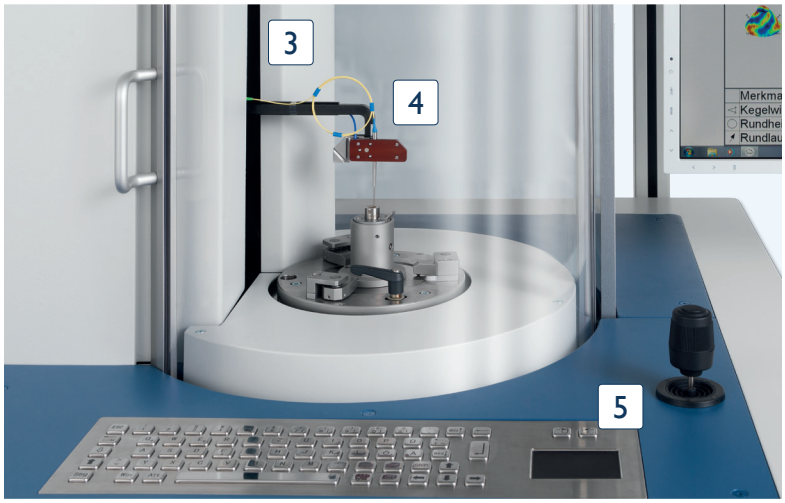
Removes vibrations and ensures stable measurements - Crucial when measuring in production environments.

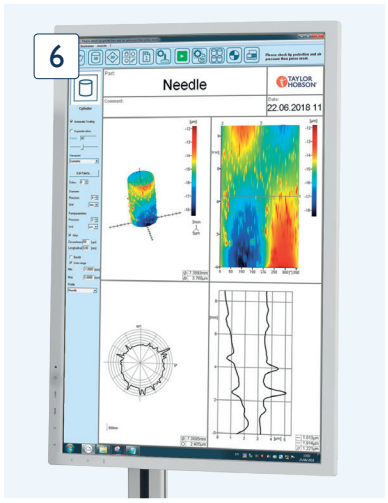
2 Environmental chamber.

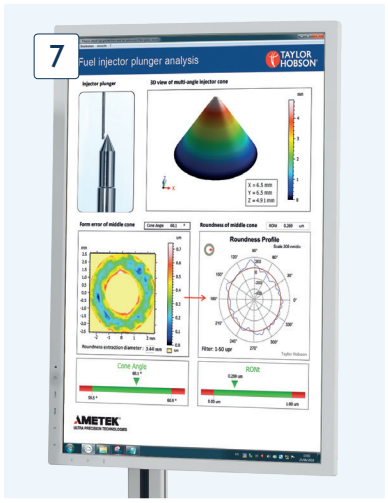
Excludes any external influences from effecting the measurement - Supporting clean, accurate results.

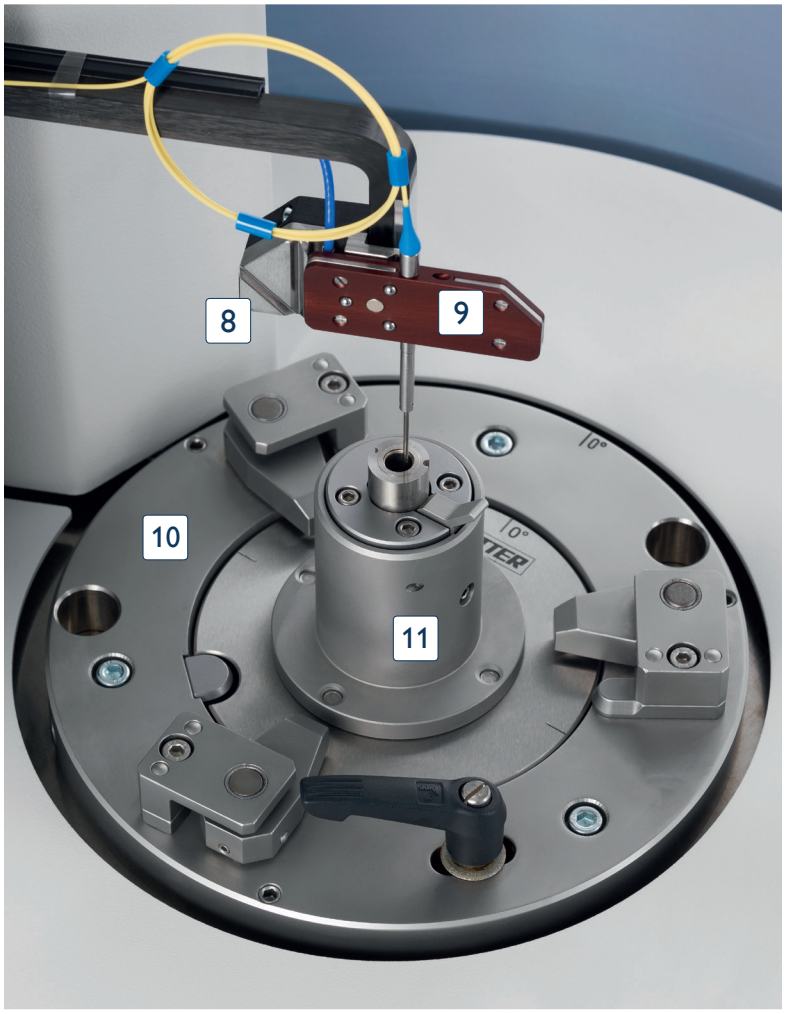
3 Ultra precision column.

A 200 mm column - Ideal for straightness, parallelism and 3D spiral scanning.









4 High accuracy glass scale arm.

A 65 mm arm - Enables diameter to be measured with external diameters of up to 80 mm.

5 Precise control.

System control - Fully automated joystick control with built-in keyboard and trackpad allows fast set up.

6 Software - Measurement.

Easy to setup - Programming is made simple with the intuitive and user-friendly interface.

7 Software - Analysis.

Powerful software - 3D analysis to view surface features and defects in greater detail.

8 Fully automated Y-crest.

Y-crest - Accurate measurement of diameter and form, critical for many applications.

9 LUPHOSpot breakaway probe.

3-point connection - Speed up your set up time with fast changes of probe or orientation.

10 Spindle.

Rotation speeds of 200 rpm - Rapid measurements in full 3D aided by automatic centre and level.

11 Stable fixturing.

Dedicated stable fixtures - Designed for fast fitting and removal of components.

TALYScan 280

A flexible system to suit many applications.
Detailed 3D measurement.

Hydraulic components.

The diameter of the LUPHOSpot probe allows access into small holes for internal and external roughness measurement.

It is perfectly suited to measuring interrupted surfaces at high speeds with sharp, clearly defined edges.

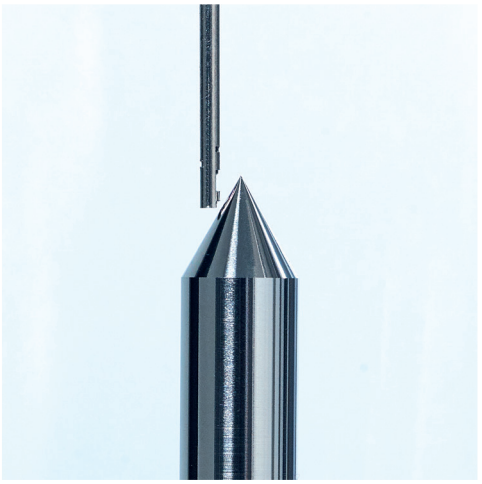
The result is a full 3D analysis of the whole hydraulic part.

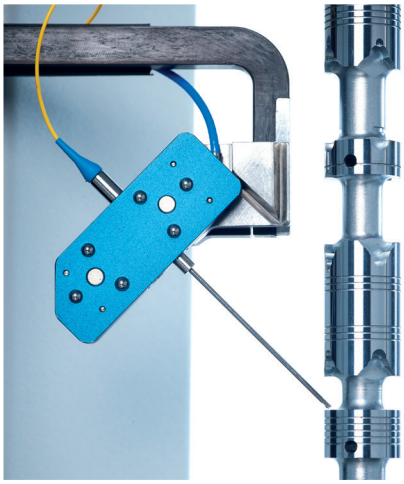
Injectors.

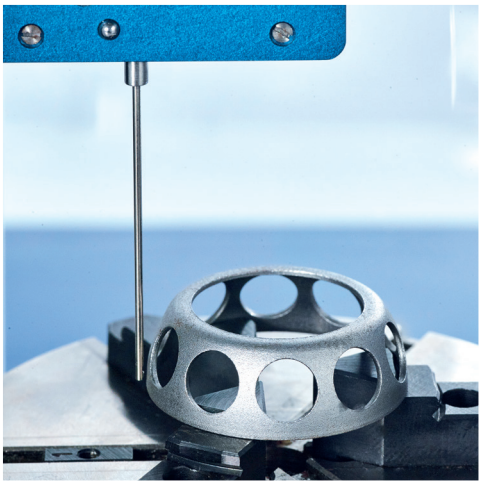
The LUPHOSpot probe enables access to very small holes, which is critical to the measurement of injectors.

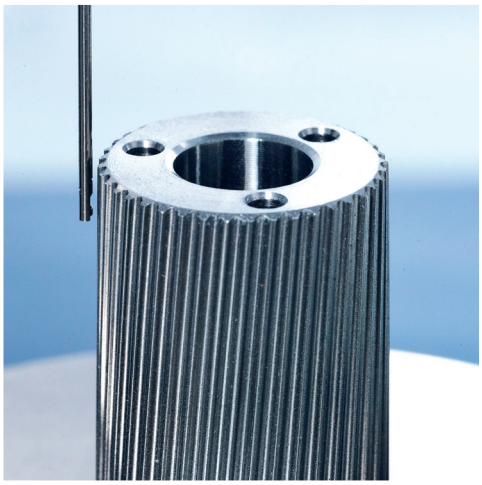
The TALYScan 280 is capable of measuring the injector cone and cylinder in the same routine.

Roundness, straightness, parallelism and cone angle are extracted from a single 3D measurement.









Roundness.

Fully non-contact roundness measurement with a 2D profile that only takes 7 seconds.

Straightness.

The high precision column allows straightness and parallelism measurements.

Interrupted surfaces.

The non-contact probe along with the high-speed spindle enables interrupted surfaces to be measured with ease.

Interrupted surfaces can be measured at full speed without any loss of accuracy, providing high throughput on even the most challenging components.

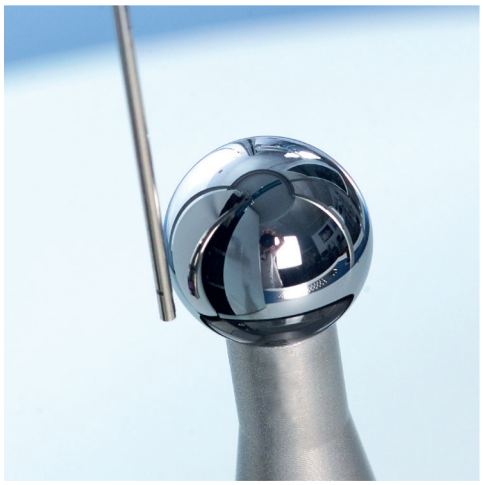
The technology provides clear edges with no stylus bounce and a full 3D map over the full volume.

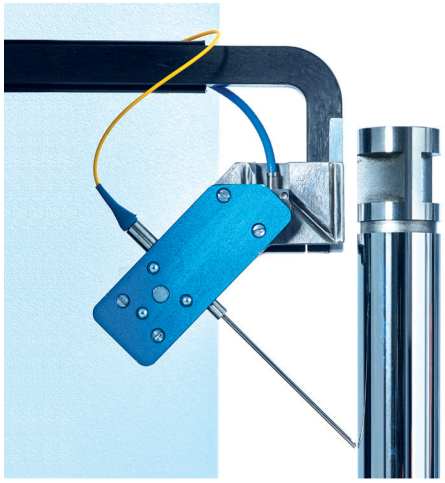
Roughness.

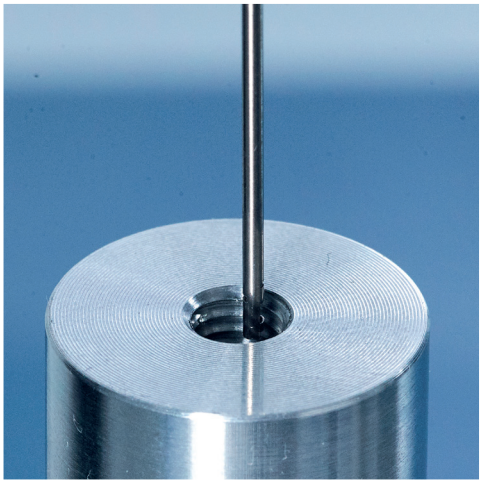
Roughness and form can be measured at the same time using a probe with a 9 µm spot size.

Parallelism.

Parallelism measurements are made quick and easily with TALYScan's easy-to-use software.







Roller bearings.

Non-contact 3D measurement for improving the design and functionality of roller bearings and ensuring that they are manufactured precisely in accordance with their design criteria.

Precision cylinders.

The high precision column of the TALYScan 280 enables precision cylinders can be measured quickly and with high accuracy.

Lens barrels.

In order to optimise the performance of optical assemblies, alignment of the individual optical components is essential.

Thin walled, long cylinders.

No deformation of thin/long parts is experienced with the non-contact probe.

Diameter.

Diameter measurements can be made both internally and externally.

A single or dual probe can be utilised to obtain diameter.

Flatness - 2D & 3D.

Flatness can be obtained in full 3D or as a 2D scan depending on the application.

3D - cone & cylinder.

The dual probe capability is perfect for the measurement of cones and cylinders in the same routine. One probe is orientated to point at the cone surface and the other is orthogonal to the cylinder surface.

The software can automatically calculate needle tip angles or residual angle against designs. The tip can be analysed for roundness, form and surface finish with concentricity of the needle tip to the component axis also possible.

Additionally, the advanced analysis can be adjusted for multiple roundness plane heights and straightness angular positions.

Full 3D mapping of internal and external surfaces, combined with multi plane roundness, straightness and squareness analysis is possible to fully characterise any cylindrical surface.

TALYScan 280

Powerful software.

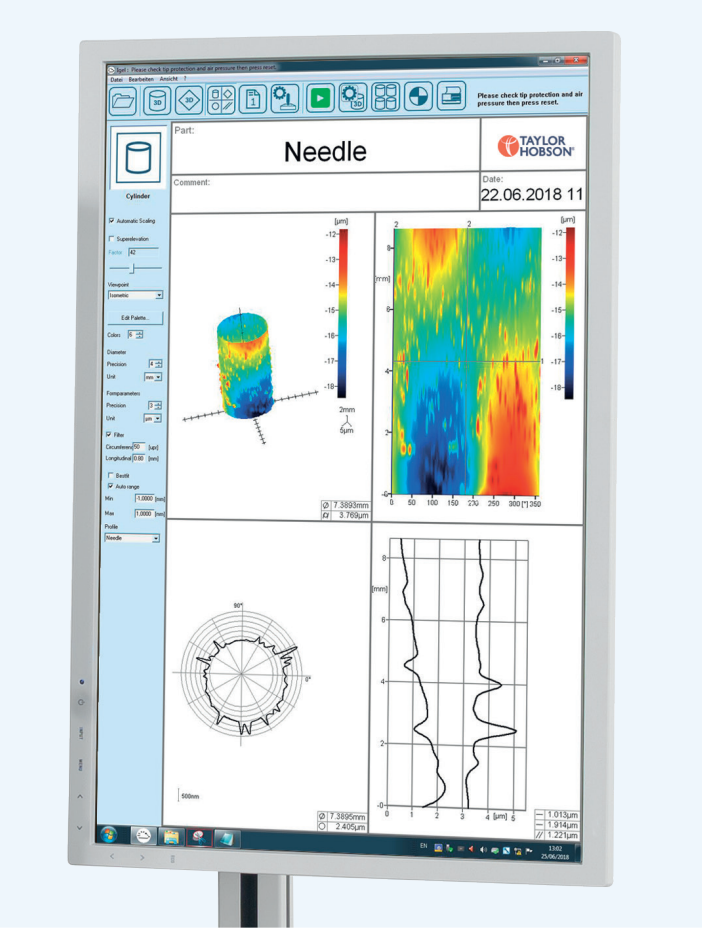
Intuitive, easy to use and production friendly.

Forward thinking.

The user can quickly and easily monitor the full measurement process with live feedback from the measurement axes and probe.

The TALYScan 280 is equipped with Q-DAS output function. This enables you to automatically export 3D point cloud data directly to SPC software which delivers feedback to your manufacturing process.

This form of monitoring is used widely in automotive and aerospace component manufacturing, where data and strict standard operating procedure control is mandatory.



Advanced analysis.

Unmatched speed and accuracy.

The TALYScan 280 displays 3D views and cutaways of the error map upon completion of the measurement.

Analysis of the data is further aided by tools such as best fit, filtering and thresholding along with user defined scaling and viewpoints.

User determined analysis, with customisable filtering, layouts, graphical displays and SPC tolerancing with multi-view measurement reports, pass/fail and warning indicators, provide a truly immersive experience.

Critical analysis types include:

- Diameter
- Form
- Roughness
- Waviness
- Primary profile
- Dominant wavelength
- Cylindricity
- Straightness
- Cone angle
- Flatness
- Concentricity
- Radial runout
- Axial runout
- Coaxiality
- Parallelism
- Perpendicularity
- Pitch

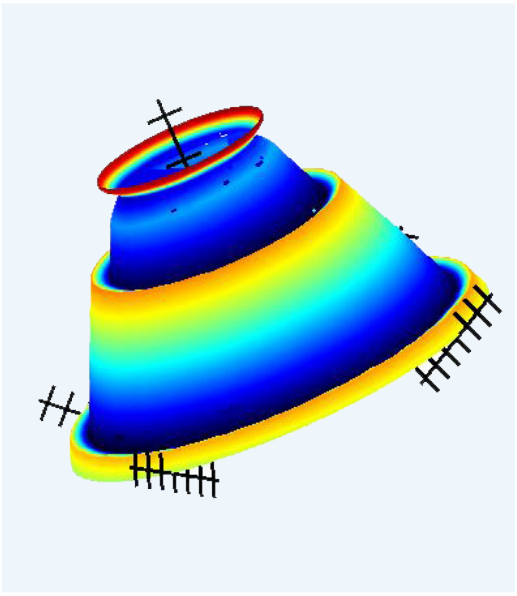
Application specific modules.

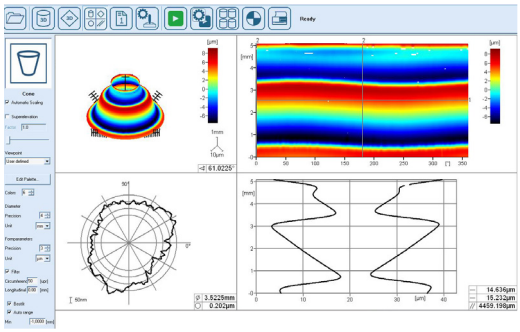
Fully customisable with unique modules to meet specific needs.

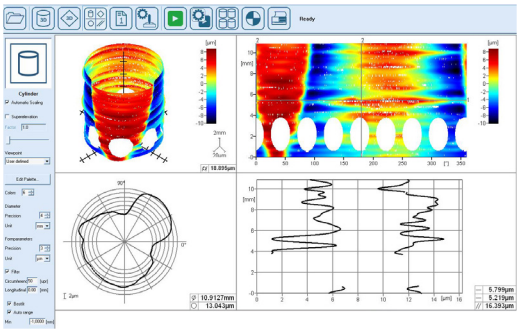
In-depth analysis to reduce wear, vibration and noise, improving functionality, quality and performance.

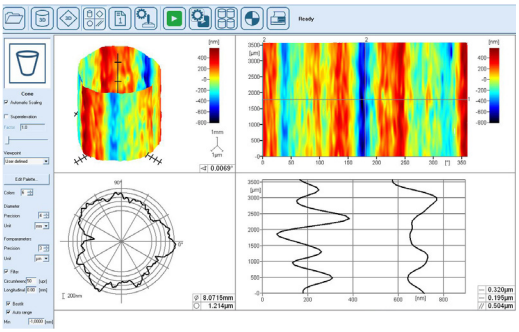
Dedicated 2D and 3D analysis for fuel injectors:

- Needle cone and nozzle seat roundness
- Nozzle seat geometry
- Cone angles and straightness
- Cone alignment to shaft datum
- Shaft roundness and cylindricity









TalyMap® analysis software.

A powerful solution for data analysis.

TalyMap® has been designed specifically for the metrology industry for advanced data analysis.

TalyMap® includes enhanced productivity tools such as templates for repetitive work and automatic report generation based on batches of measurement data.

New analytical functions include 4D analysis of 3D surfaces as they evolve over time, pressure or other physical proper ties.

The software is used by research laboratories and industrial facilities worldwide for product development, process improvement and predictive behaviour analysis.

Software features.

- Fast and accurate surface metrology reports with intuitive desktop publishing environment.
- Analysis of different types of measurement data - 2D profiles and 3D surfaces.
- Intelligent preprocessing - TalyMap® contains numerous operators for normalizing measurement data and eliminating noise, aberrations or anomalies.
- Real time 3D surface imaging TalyMap® provides complete 3D (x, y, z) surface visibility at any angle in real time.
- Metrological and scientific filters.

TALYScan 280

Complete trust in your metrology platform.
Critical results, trust Taylor Hobson.

Precise, reproducible measurement results.

The system's small footprint permits installation close to the production line. The wear-free, low maintenance design guarantees high reliability in the most demanding environments.

The metrology frame is uncoupled from mechanical influences and by utilising low thermal expansion coefficient materials, the effects of environmental noise are minimised.

Precision encoders on the axes allow accurate lateral and vertical movement of the probe, resulting in highly repeatable positioning.

Flexible

The LUPHOSpot non-contact optical sensor delivers measurement results on thin, delicate and very small components without influencing the surface.

The geometry of the probe allows greater access to inner contours, edges, complex shapes and small bores down to Ø125 µm, which typically are difficult to access.

This flexibility combined with fast measurement speeds provide highly accurate results in the shortest possible time. Having access to these results next to the manufacturing process is key to highlighting component faults quickly and effectively.

Automation

Automated measurement routines, simplified programming techniques and on-screen instructions reduce operator error, independent of skill level. This maximises throughput and provides error free operation.

Calibration

Calibration of the system is achieved via an automated one hit routine, using traceable artefacts.

This provides fast accurate, repeatable results each time with minimal operator intervention.

Custom fixtures

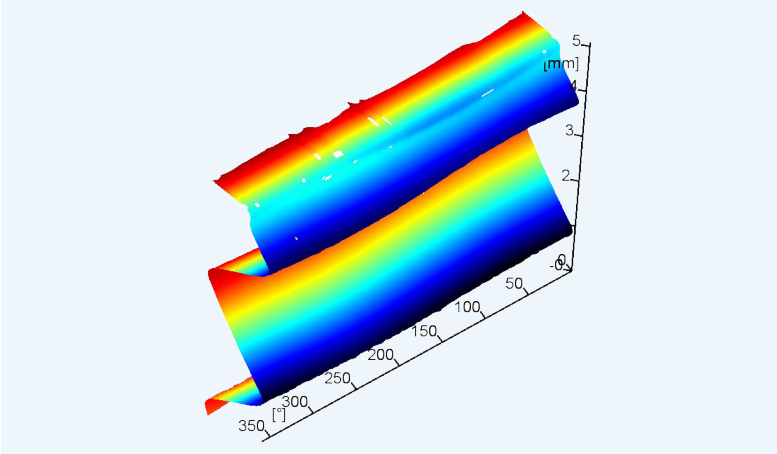
Taylor Hobson offer fully customised work holding solutions to meet the demands of every application. Our in-house design and manufacturing facilities allow complete control of the process.

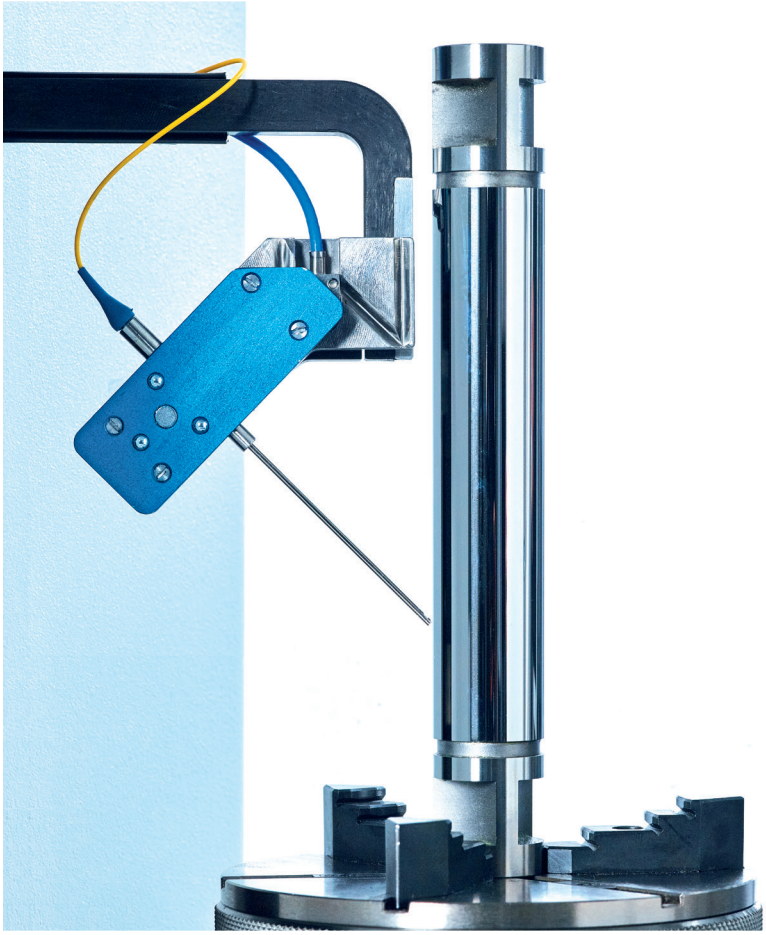
Our continued investmentment in the latest design and manufacturing techniques enable Taylor Hobson to provide unrivalled quality and functionality.

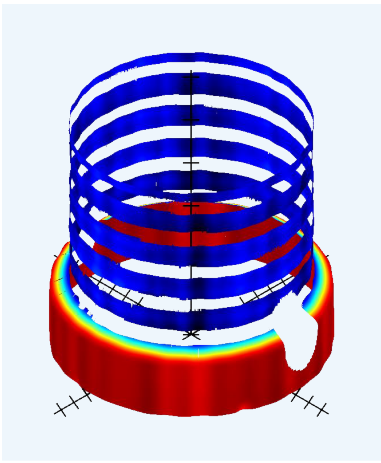
Protection

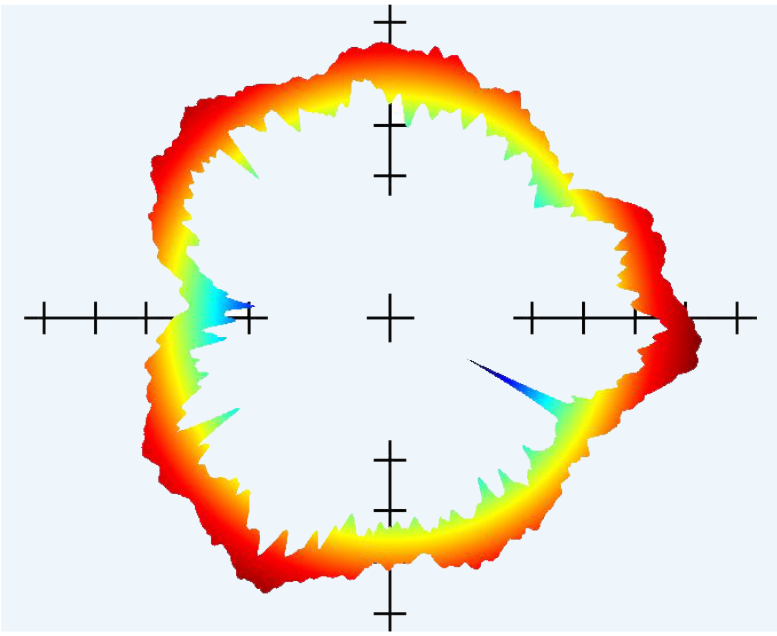
The TALYScan's intelligent collision detection system automatically detects and stops motion to protect the probe from accidental damage during both automatic and manual operation. This helps to minimise downtime and reduce cost of ownership.

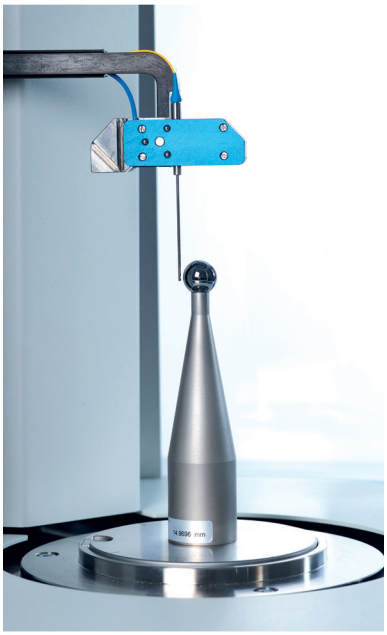
Versatile and accurate.
Suitable for a wide range of applications.











TAYLOR HOBSON®

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ULTRA PRECISION TECHNOLOGIES

The Metrology Experts

Established in 1886, Taylor Hobson is the world leader in surface and form metrology and developed the first roundness and surface finish measuring instruments.

www.taylor-hobson.com

Sales department

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- **Design engineering** – special purpose, dedicated metrology systems for demanding applications.
- **Precision manufacturing** – contract machining services for high precision applications and industries.

Centre of Excellence department

Email: **taylor-hobson.cofe@ametek.com**
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- **Inspection services** – measurement of your production parts 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 and testing** – certification for artifacts or instruments in our laboratory or at customer's site.

Service department

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- **Preventative maintenance** – protect your metrology investment with an AMECare support agreement.

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