



# SmartScope

Multisensor Measurements for Manufacturing Professionals

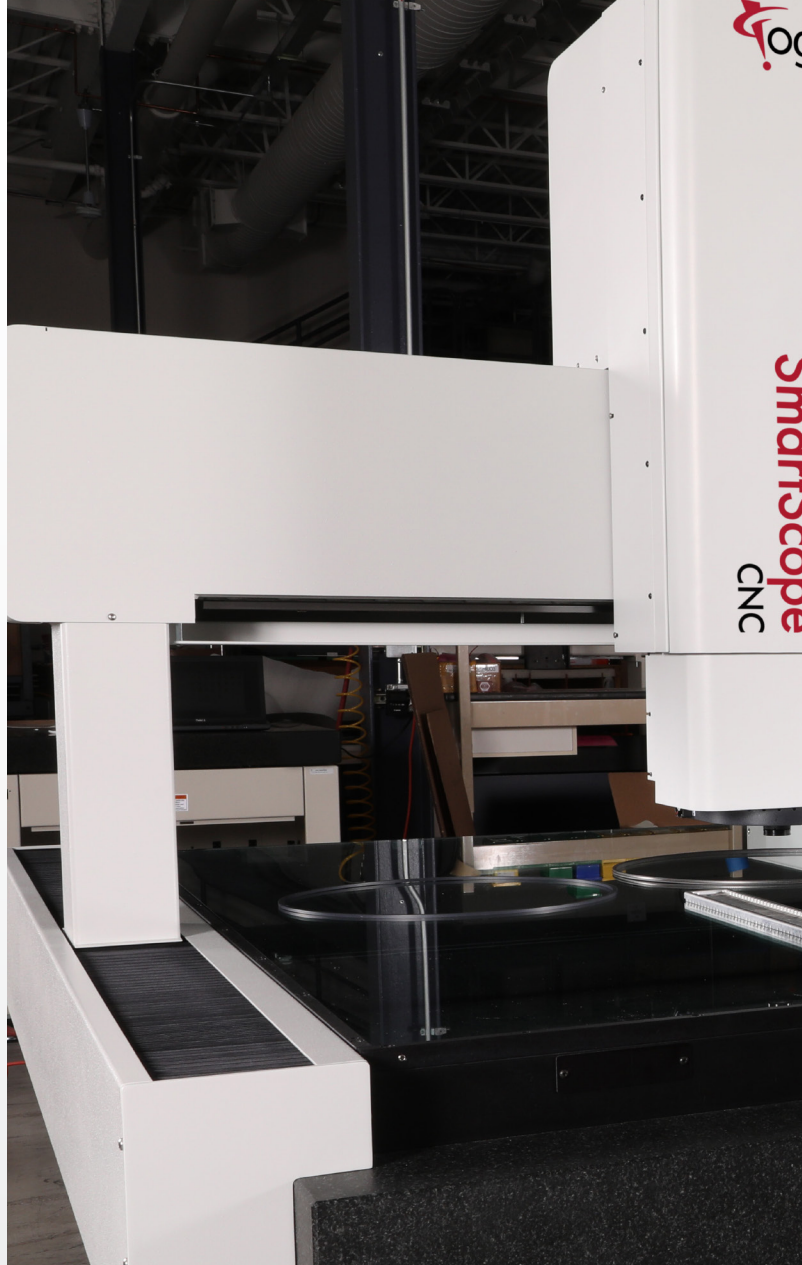
# SmartScope Flash CNC

## General Purpose Multisensor Measurement

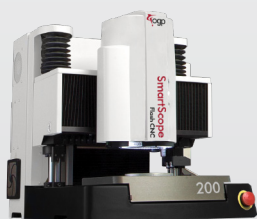
SmartScope Flash™ CNC systems are versatile “all-in-one” multisensor measuring systems built to handle a wide variety of measurement tasks. The Flash CNC product line offers the largest range of XYZ machine travels, as well as models with expansive XY travels to easily accommodate very large parts.

A 12:1 zoom metrology lens features exclusive AccuCentric® that auto-compensates itself after every magnification change. Flash CNC offers a range of innovative illumination sources for video measurements. Substage profile light, coaxial surface light, and the SmartRing™ white LED oblique illuminator are standard on all Flash CNC systems.

SmartScope Flash CNC can be configured as an economical yet capable multisensor metrology system, with numerous combinations of touch probes, scanning probes, micro-probes, and lasers. SmartScope Flash CNC systems are extremely popular, with thousands in service worldwide.



## SmartScope Flash CNC Benchtop Systems



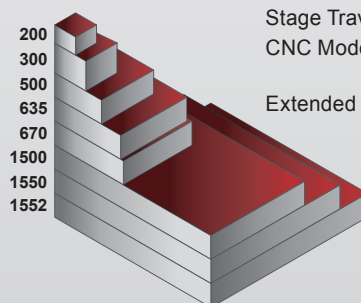
### SmartScope Flash CNC 200

- Benchtop, Elevating Bridge
- 200x200x150 mm
- Options: Touch Probe, TTL Laser, Feather Probe



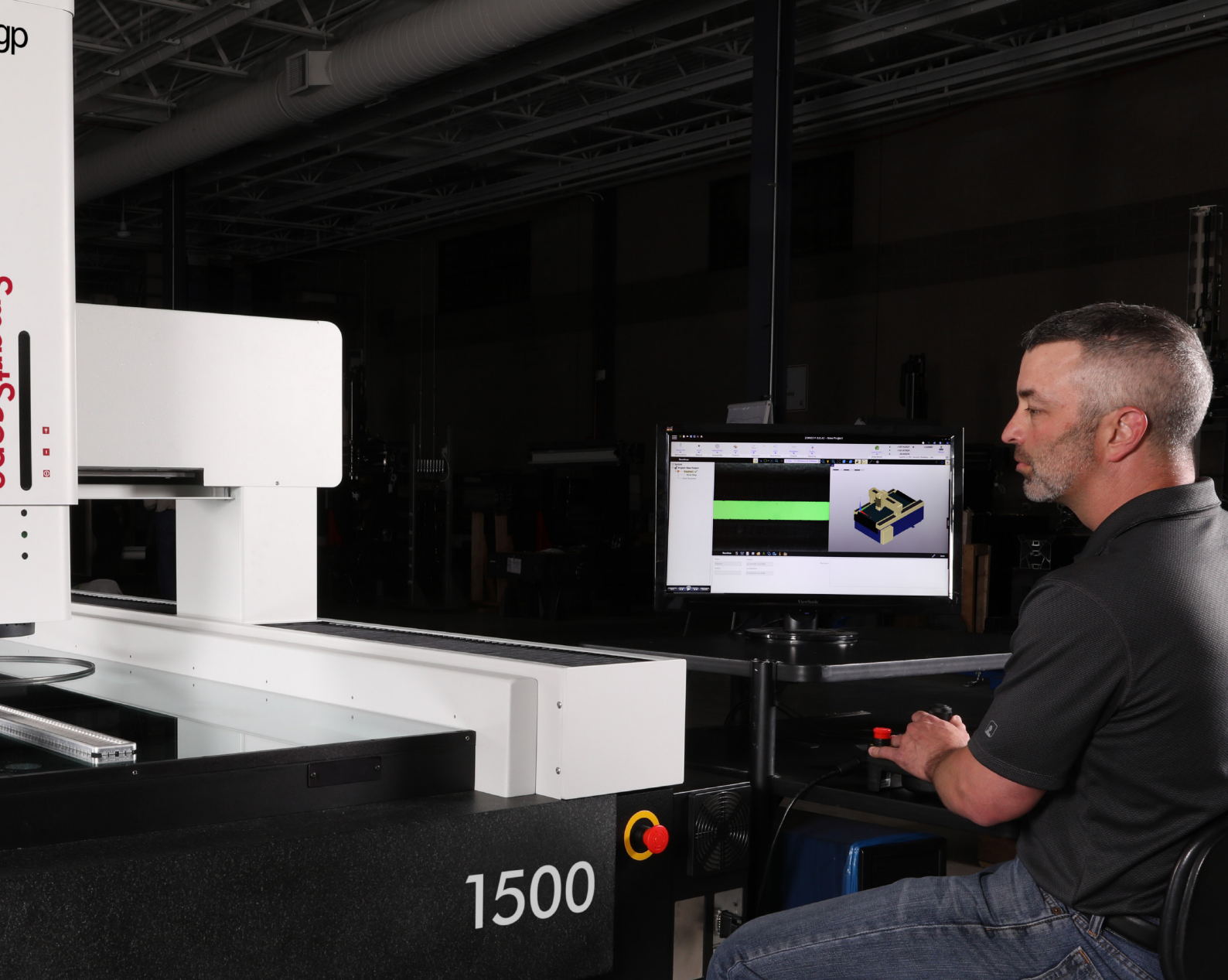
### SmartScope Flash CNC 300

- Benchtop, Elevating Bridge
- 300x300x250 mm
- Options: Touch Probe, Scanning Probe, TTL Laser, Feather Probe



Stage Travel (mm) for all SmartScope Flash CNC Models.

Extended travels available.



## SmartScope CNC Floor Models



### SmartScope CNC 500

- Floor Model, Fixed Bridge
- 500x450x200 mm, Ext Y 610 mm (opt), Ext Z 300 mm (opt)
- Options: Touch Probe, Scanning Probe, TTL or DRS™ Laser, Feather Probe, Rainbow Probe



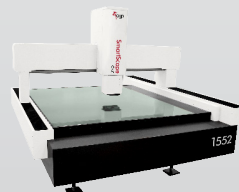
### SmartScope CNC 670

- Floor Model, Moving Bridge
- 650x660x200 mm, Ext Z 300 mm or 400 mm (opt)
- Options: Touch Probe, Scanning Probe, TTL or DRS Laser, Feather Probe, Rainbow Probe



### SmartScope CNC 635

- Floor Model, Moving Bridge, Air-Bearing Y-axis
- 635x635x200 mm
- Options: Touch Probe, Scanning Probe, TTL or DRS Laser, Feather Probe, Rainbow Probe



### SmartScope CNC 1500 | 1550 | 1552

- Floor Model, Moving Bridge
- 1500 Model: 900x1500x200 mm, 1550 Model: 1250x1500x 200 mm, 1552 Model: 1500x1500x200 mm,
- Options: Touch Probe, TTL or DRS Laser, Rainbow Probe\*

\* Subject to application review

# SmartScope ZIP

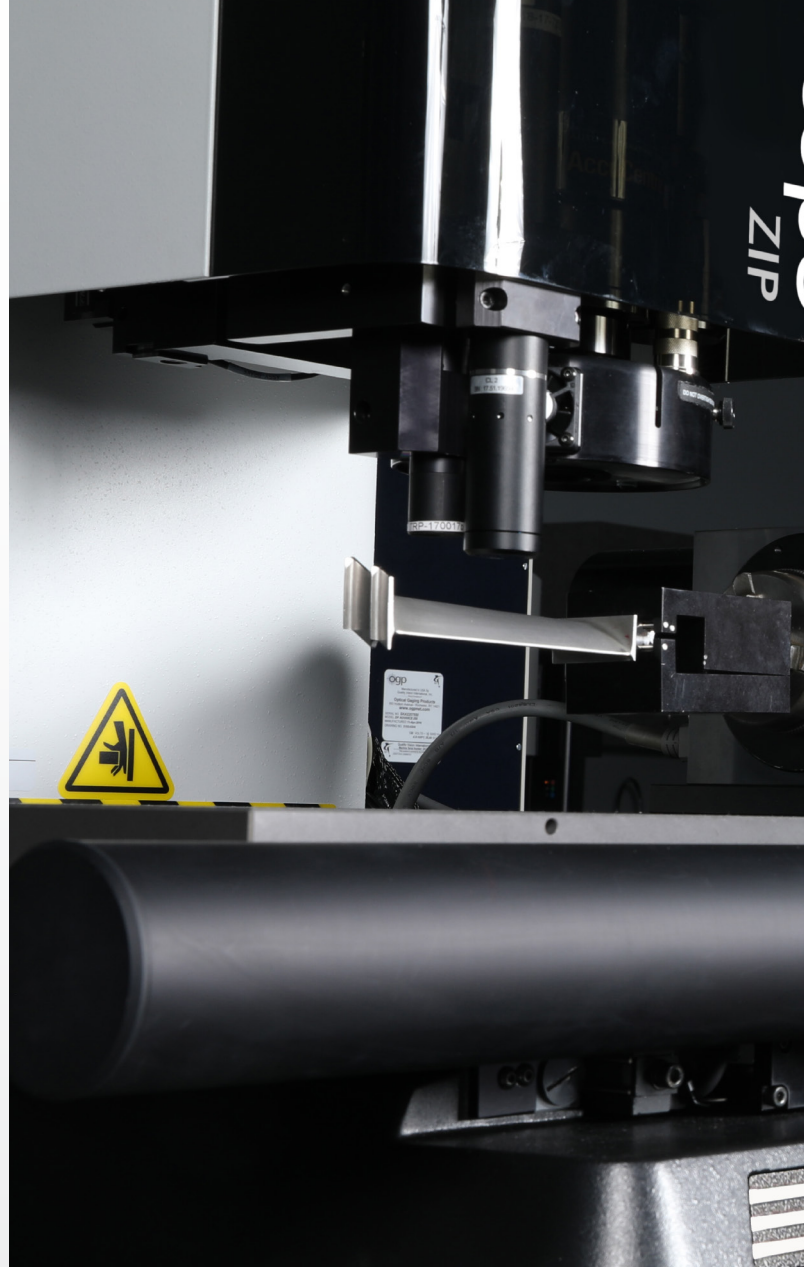
## Advanced Multisensor Performance

SmartScope ZIP® systems, the most popular selling OGP system in the world, offer superior optical performance and a range of machine travels to deliver reliable performance. SmartScope ZIP features the proven performance of AccuCentric® autocompensating zoom optics.

ZIP offers the widest range of flexible illumination sources in the SmartScope line. LED profile, surface and SmartRing™ oblique sources are standard. Optional Tungsten-Halogen fiber optic surface and ring lights and the high intensity LED VuLight™ can be added to handle the toughest measurement challenges.

ZIP models excel at video measurement and multisensor versatility for the highest productivity.

ZIP HR 250 offers advanced image and illumination through a 5-megapixel monochrome digital camera and a programmable ring light (PRL) that provides the ability to automatically change the angle of incidence.



## SmartScope ZIP Benchtop Systems



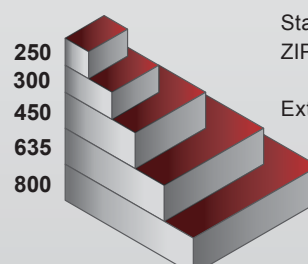
### SmartScope ZIP 250

- Benchtop, Compound Stage
- 250x150x200 mm, Ext X 300 mm (opt)
- Options: Touch Probe, Scanning Probe, TTL or DRS Laser, Feather Probe, Rainbow Probe, TeleStar Probe



### SmartScope ZIP HR 250

- Benchtop, Compound Stage
- 300x150x200 mm
- Options: Touch Probe, Scanning Probe, TTL Laser, TeleStar Probe

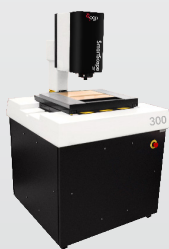


Stage Travel (mm) for all SmartScope ZIP Models.

Extended travels available.



## SmartScope ZIP Floor Models



### SmartScope ZIP 300

- Floor Model, Compound Stage
- 300x300x200 mm, Ext Z 300 mm (opt)
- Options: Touch Probe, Scanning Probe, TTL or DRS Laser, Feather Probe, Rainbow Probe, TeleStar Probe



### SmartScope ZIP 635

- Floor Model, Moving Bridge, Air-Bearing Y-axis
- 635x635x200 mm
- Options: Touch Probe, Scanning Probe, TTL or DRS Laser, Feather Probe, Rainbow Probe, TeleStar Probe



### SmartScope ZIP 450

- Floor Model, Fixed Bridge
- 450x450x200 mm, Ext Y 610 mm (opt), Ext Z 300 mm (opt)
- Options: Touch Probe, Scanning Probe, TTL or DRS Laser, Feather Probe, Rainbow Probe, TeleStar Probe



### SmartScope ZIP 800

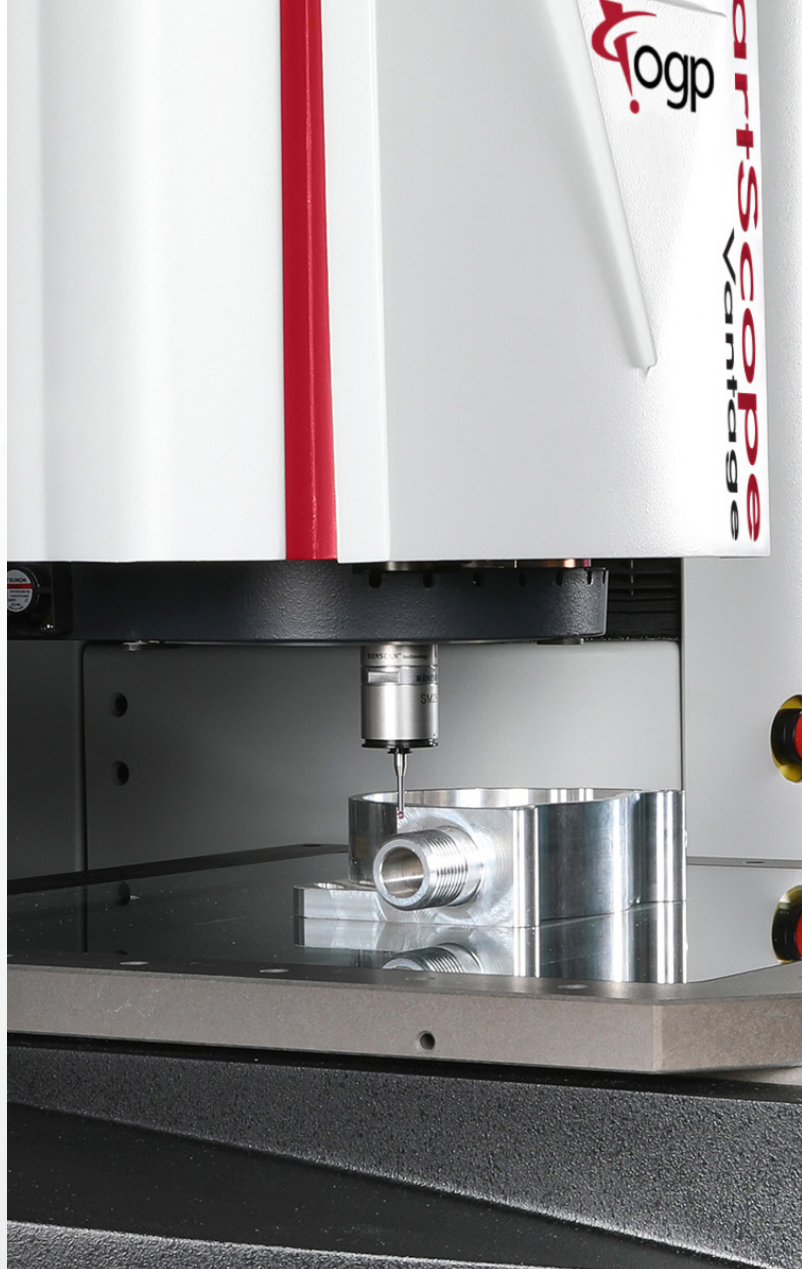
- Floor Model, Fixed Bridge
- 800x820x200 mm, Ext Z 300 mm (opt)
- Options: Touch Probe, Scanning Probe, TTL or DRS Laser, Feather Probe, Rainbow Probe, TeleStar Probe

# SmartScope Vantage

## The Ultimate Multisensor System

SmartScope Vantage systems are designed to provide the best optical performance and the highest accuracy in three-dimensional multisensor measurement. Its exclusive TeleStar 10:1 zoom lens is completely telecentric and automatically compensated throughout its zoom range, for distortion-free, high fidelity images. Generous working distances make it easy to measure large parts with machine travels from 300x150x200 mm to 790x815x400 mm. Multiple illumination sources, including substage profile light, coaxial surface light, and the SmartRing green LED oblique illuminator are standard on all Vantage systems.

The combination of sensor tools offered by SmartScope Vantage allows complete measurement of complex parts in a single setup to handle the toughest measurement challenges.

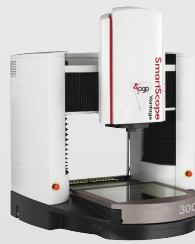


## SmartScope Vantage Benchtop Systems



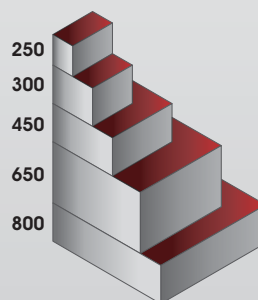
### SmartScope Vantage 250

- Benchtop, Compound Stage
- 300x150x200 mm
- Options: Touch Probe, Scanning Probe, TeleStar TTL or DRS Laser, Feather Probe, Rainbow Probe



### SmartScope Vantage 300

- Benchtop, Elevating Bridge, Air-Bearing Z-axis
- 300x300x250 mm
- Options: Touch Probe, Scanning Probe, TeleStar TTL Laser or Feather Probe



Stage Travel (mm) for all SmartScope Vantage Models.

Extended travels available.

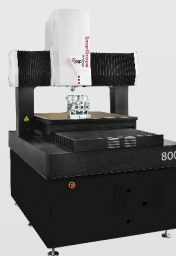


## SmartScope Vantage Floor Models



### SmartScope Vantage 450

- Floor Model, Fixed Bridge
- 450x450x250 mm, Ext Y 610 mm (opt), Ext Z 300 or 400 mm (opt)
- Options: Touch Probe, Scanning Probe, TeleStar TTL or DRS Laser, Feather Probe, Rainbow Probe



### SmartScope Vantage 800

- Floor Model, Fixed Bridge
- 790x815x300 mm, Ext Z 400 mm (opt)
- Options: Touch Probe, Scanning Probe, Articulating Probe Head, TeleStar TTL or DRS Laser, Feather Probe, Rainbow Probe



### SmartScope Vantage 650

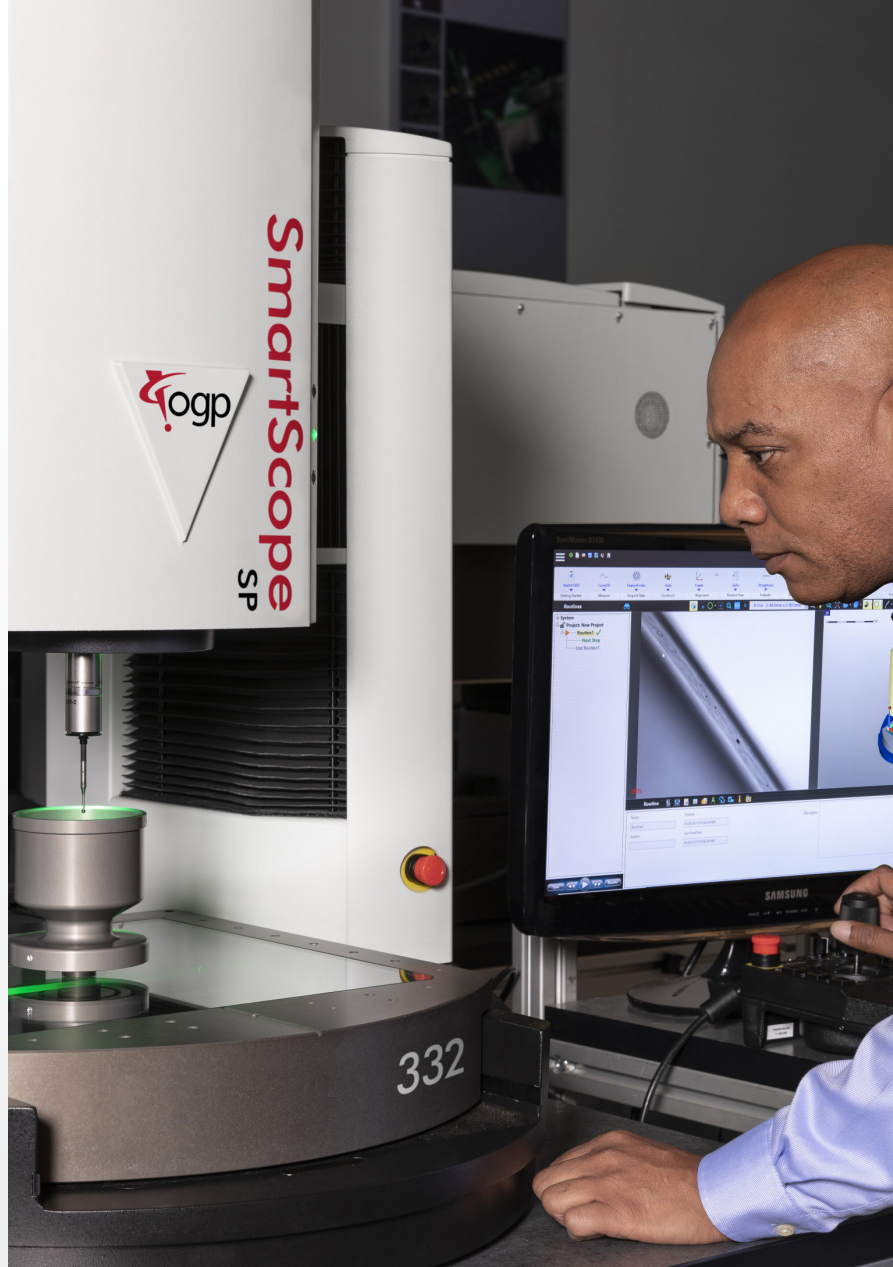
- Floor Model, Fixed Bridge
- 610x660x400 mm
- Options: Touch Probe, Scanning Probe, Articulating Probe Head, TeleStar TTL or DRS Laser, Feather Probe, Rainbow Probe

# SmartScope SP

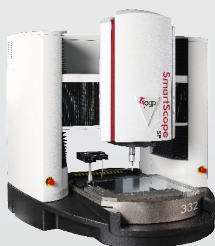
## Optimum Scanning Probe Performance

SmartScope SP systems are designed for optimum scanning probe performance. Starting with a rigid base structure, the system mechanics are designed to optimize dynamic data acquisition critical to scanning probe performance. Accuracy specifications for SP models are according to ISO 10360 standards. SmartScope SP optics combine a wide field objective lens, digital zoom, and 5-megapixel monochrome digital camera, providing a distortion-free 16 mm diagonal field of view at low zoom, with high resolution at high zoom. Careful design of both optics and illumination sources ensure accurate imaging at all zoom levels.

The optional TeleStar Plus Laser offers very long working distance with sub-micron resolution. The on-axis and through-the-lens design allows laser measurement over the full measuring range of the system.



## SmartScope SP Systems



### SmartScope SP 332

- Benchtop, Elevating Bridge, Air-Bearing Z-axis
- 300x300x250 mm
- Options: TeleStar TTL Laser



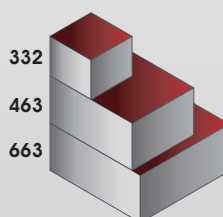
### SmartScope SP 663

- Floor Model, Moving Bridge
- 650x660x300 mm
- Options: TeleStar TTL Laser



### SmartScope SP 463

- Floor Model, Fixed Bridge
- 450x610x300 mm
- Options: TeleStar TTL Laser



Stage Travel (mm) for all SmartScope SP Models.

All sizes reflect stage travel.

# SmartScope E-Series

## Fully Automatic 3-Axis Video Measurement

SmartScope E-Series systems from are fully automatic systems set the standard for 3-axis video measurement performance.

The fixed lens IntelliCentric™ optical system with 6-megapixel color camera and digital zoom provide a high resolution image engineered for video edge detection metrology. All LED coaxial, substage profile, and SmartRing light illumination is standard.

Measure-X® metrology software provides powerful programming capability with an easy-to-use operator interface. From creating part measurement routines to operating a system in a production work environment, Measure-X metrology software offers power without intimidation and is the ideal choice for general-purpose video and multisensor metrology.

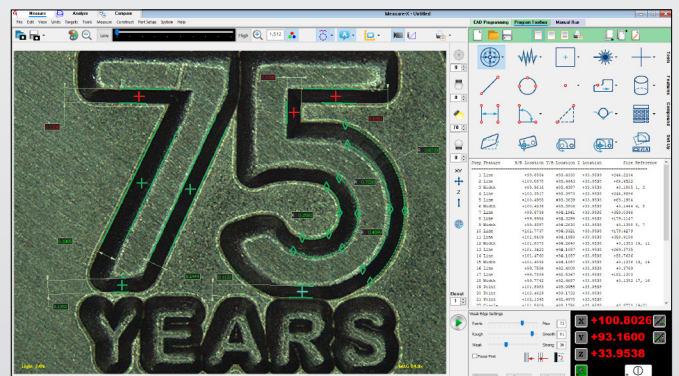


## SmartScope E-Series Systems



### SmartScope E7

- Benchtop, Compound Stage
- 250x150x200 mm, Ext X 300 mm (opt)
- Options: Touch Probe, DRS Laser



Full feature Measure-X metrology software offers 2D CAD program generation and general-purpose dimensional measurement with multisensor and rotary axis support.

# A Size for Every Solution



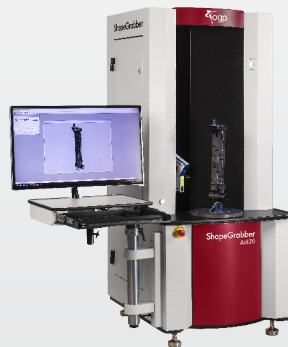
Scan to see the SmartScope video

## Additional Systems from OGP



### Fusion™

Fusion systems are innovative multisensor measurement systems that combine a unique large field-of-view (LFOV) optical system with tactile and laser sensors, to form a uniquely productive multisensor metrology system.



### ShapeGrabber®

ShapeGrabber 3D Laser Scanning systems deliver fast, accurate and automated 3D measurement. The ShapeGrabber is ideal for measuring complex shapes such as molded plastics, castings, stampings, and machined parts and that are time-consuming, costly, and difficult to measure. Using multiple motion axes, ShapeGrabber laser scanners eliminate the need for software alignment and registration and ensure fast, accurate results.



### FlexPoint™

FlexPoint floor model systems are true multisensor systems supporting tactile and non-contact sensors such as the SmartProbe® video probe and TeleStar interferometric laser all powered by ZONE3. The VersaFlex™ multisensor head offers up to three simultaneously available sensors on an articulating probe head. With several sensors simultaneously available, there is no down time while individual sensors are exchanged from a change rack, and no need to recalibrate each time a sensor is used.



VersaFlex Articulating Sensor Array only available on FlexPoint Systems.

\* US Patent Number 10 222 207 B2

# The SmartScope Multisensor Advantage

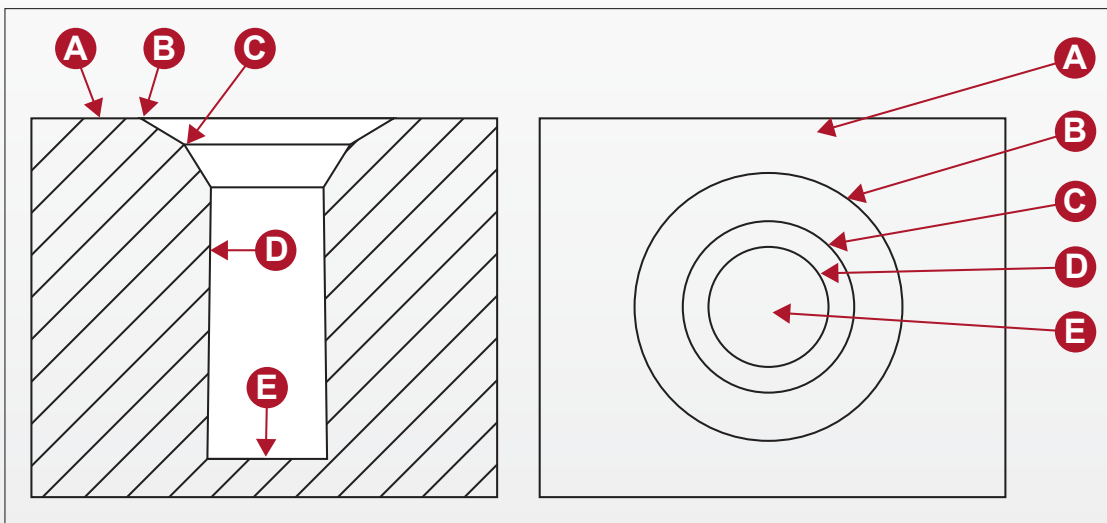
Multisensor metrology systems offer significant advantages in measurement speed and accuracy. By using the best type of sensor for individual dimensions, multisensor systems measure parts faster, more thoroughly, and more accurately.

OGP SmartScope systems are designed as multisensor systems from the ground up. All sensors are integrated seamlessly with the system mechanics and software, simultaneously compensated and available for use at any step in the measurement routine.

Diameters **B** and **C** can be measured using video

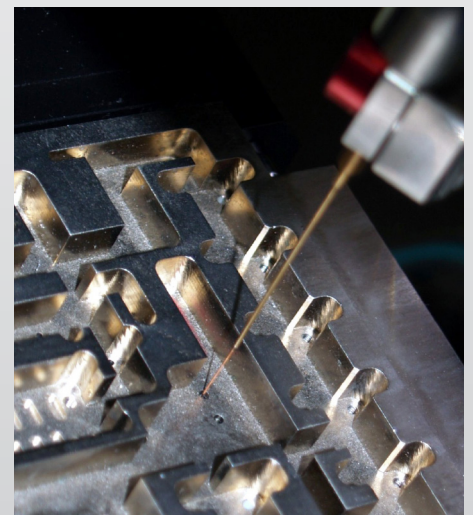
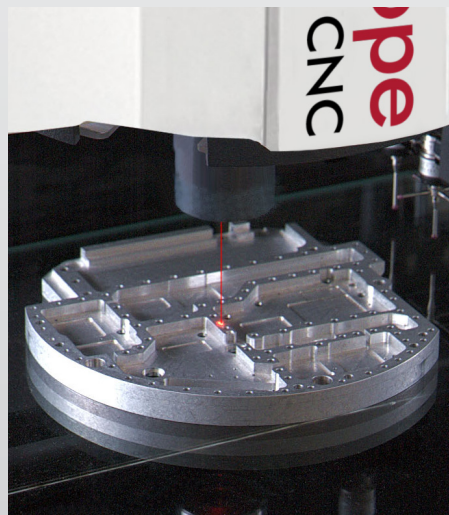
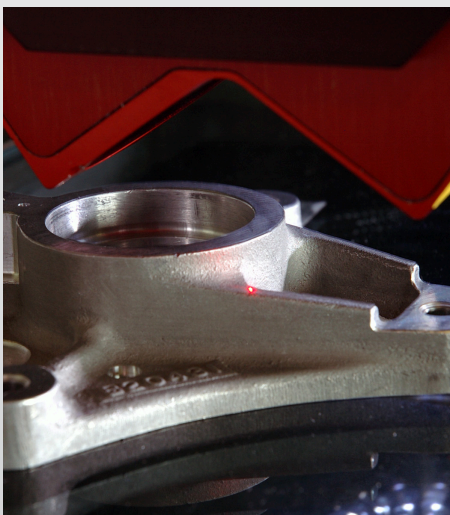
Diameter **D** can be measured using a touch probe

Surfaces **A** and **E** can be measured using a laser



## Multisensor Measurement Systems Provide Complete 3D Measurement Data from a Single Measuring Machine

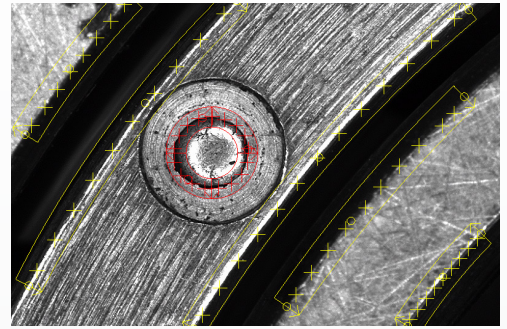
Video, tactile probes, laser, and micro-probes combine for total part characterization, with better accuracy in a fraction of the time it would take on separate measuring systems.



# The SmartScope Multisensor Lineup

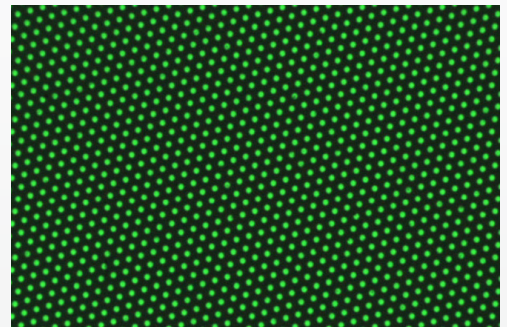
## Video Sensors

Fast, non-contact video measurement, the core technology of SmartScope systems, provides high accuracy and repeatability for defined dimensions. ZONE3® Metrology Software offers a wide variety of image analysis tools for feature detection, part orientation, and measurement for edges and surfaces.



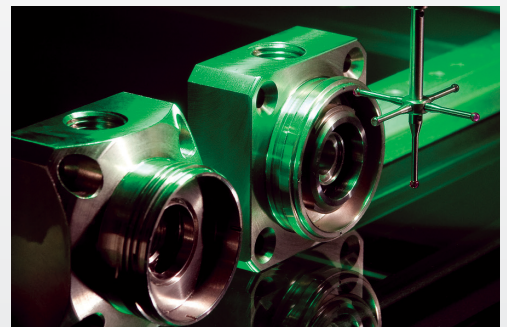
## Grid Projector

Grid Projector enables accurate autofocus on reflective surfaces for easy, fast focus – even on mirror polished metal.



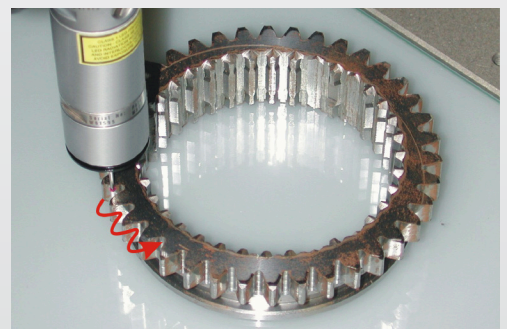
## Touch Probe (TP20/TP200)

Touch Probes measure areas that are inaccessible to optics. Choose straight, cranked or star probe arrangements, as needed. To increase versatility of a measurement system, add a 2, 4, or 6 position change rack to hold the most used probes.



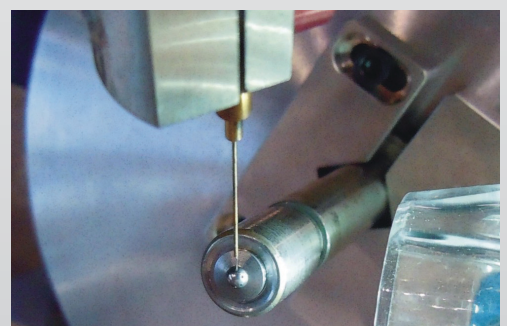
## Scanning Probe (SP25M)

Add continuous contact scanning capability to a SmartScope system with the SP25M scanning probe. Easy to use, simply select a start and end point and the scanning probe follows the part profile between those points. Both programming and measurement times are greatly reduced compared to single point probing. Add a 3 or 6 port change rack for automated changing of scanning modules and stylus holders.



## Feather Probe™

This sensor can acquire a data point with only milligrams of force making it perfect for fragile components. Probes as small as 0.127 mm provide access to small features that are inaccessible to video measurement or conventional touch probes.



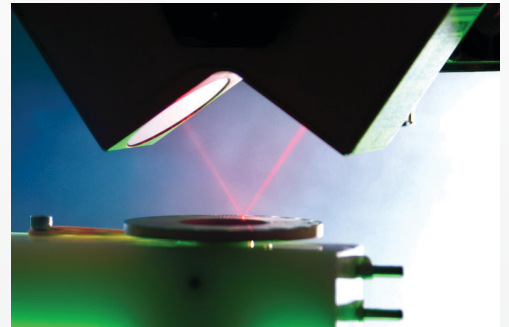
## Articulating Probe Head (PH10M PLUS)

For the ultimate in probing flexibility use either a touch trigger or scanning probe with a PH10M PLUS articulating head. Available on SmartScope Vantage™ 650 and 800 models.



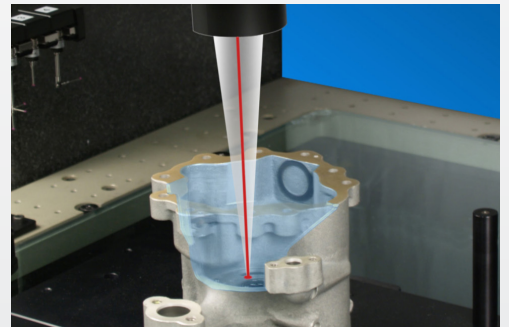
## Triangulation Laser

These lasers excel at fast and accurate Z-axis point acquisition. Use a laser for height, depth and planar measurements, or for surface profiling on complex curves and surfaces. Triangulation lasers are either through-the-lens or mounted in mechanical deployment mechanisms so they can be retracted when not in use.



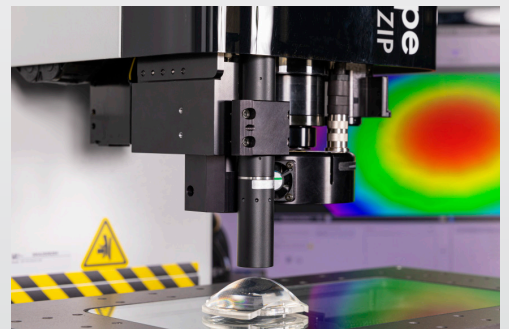
## TeleStar® Interferometric Sensors

TeleStar Sensors offer sub-micron resolution, providing excellent performance on both specular and light-scattering diffuse surfaces. TeleStar sensors may be through-the-lens (TTL) or off-axis (TeleStar Probe).



## Rainbow Probe™

Rainbow Probe easily measures transparent, translucent, fragile, liquid or easily deformable surfaces and are mounted in mechanical deployment mechanisms so they can be retracted when not in use.



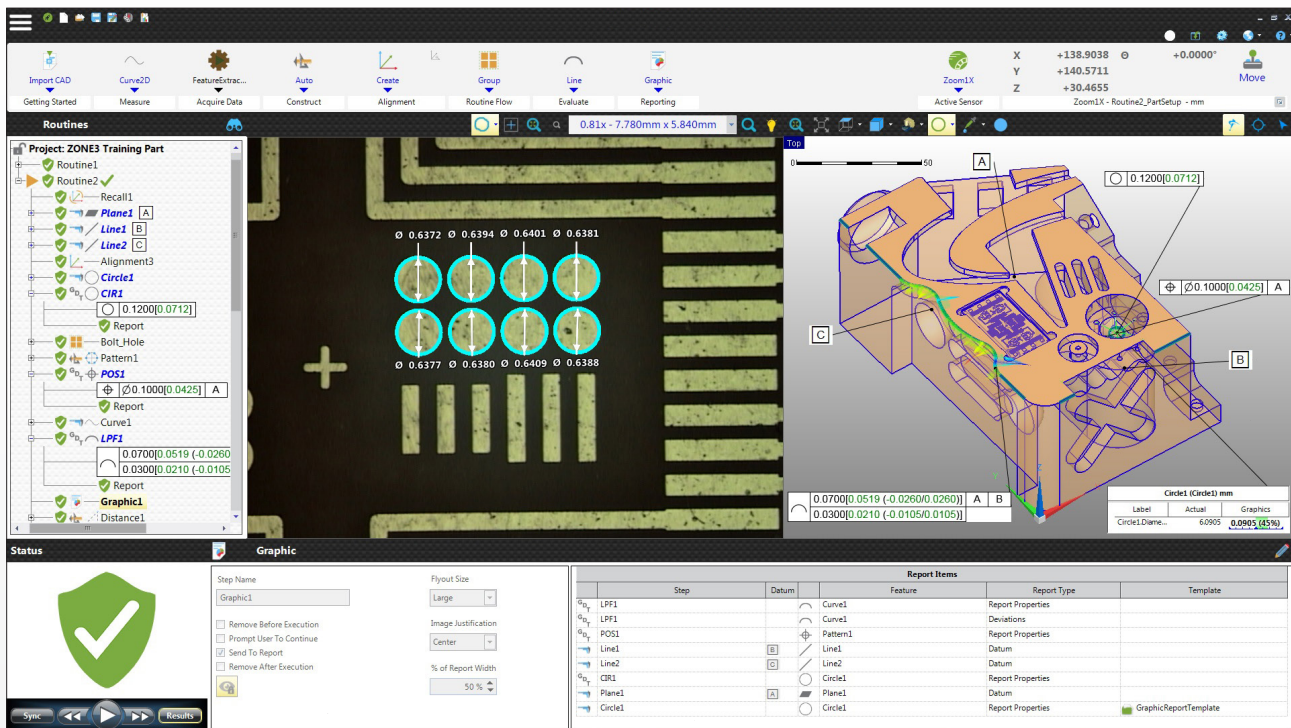
## Rotary Indexers (4th & 5th Axis)

Symmetric parts and parts with important features on many sides can be fully characterized on a SmartScope system with a rotary indexer. Available with different capacities and resolutions, rotaries allow complete measurement in a single setup. Dual-axis rotaries, comprised of two rotaries mounted together, provides full 5-axis capabilities.





# 3D Multisensor Metrology Software



**ZONE3** metrology software puts the power of OGP's 30+ years of multisensor experience into your measurement system for faster, easier and more productive measurements than ever before.

- **ZONE3 is fast.** Synchronous, full field image processing and high-speed cameras allow entire scenes to be measured instantly.
- **ZONE3 is capable.** Full multisensor capability, including scanning, laser, and scanning probe support, GD&T and custom scripting.
- **ZONE3 is easy to learn.** Regardless of which member of the ZONE3 family you use — Express, Prime, Pro or Offline — alignments, measurements and constructions are shown graphically in real time. The same procedures are used for all sensors. Learn one, you've learned them all.



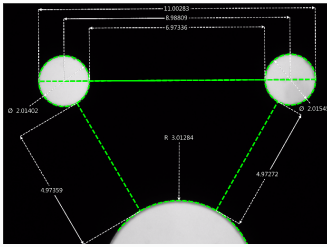
ZONE3 integrates seamlessly with other OGP metrology applications through the Portal. You can retain a library of MeasureMind® 3D and Measure-X routines and continue to run them from within their native applications, while taking advantage of new and advanced capabilities by adding ZONE3 to your SmartScope® multisensor system.

## MeasureMind3D to ZONE3 Translator

ZONE3 offers a time-saving method to convert a MeasureMind3D routine into a ZONE3 project. You can open a MeasureMind3D routine file (.rtn) in ZONE3, examine the generated part routine consisting of converted steps, edit the steps as needed, and save the resulting ZONE3 project file (.qpf).



## Manual Measurement



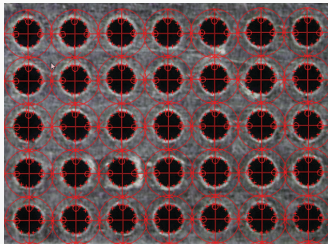
Use manual targets to make quick and easy walk-up measurements.

- No need to set up a part or import a CAD file.
- Manual measurements can be read directly off the DRO.

Use **FeatureExtractor** to automatically identify and measure features visible within the FOV.

- With one click, all prominent features are displayed as flyouts in the video window.
- Interactively hover over features to see relationships to other geometries.

## Automatic Edge Analysis Tools

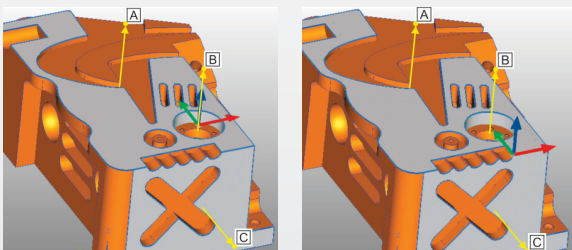


**FeatureFinder™** enables you to measure practically any kind of edge quickly and easily. When you select an edge from the video image, it automatically finds the points along the selected geometric shape (line, arc or circle), performs all the edge analyses, and displays the measurements.

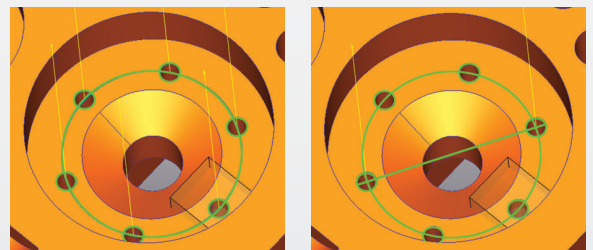
**Parallel Processing** combined with intelligent routine **Optimization** allows the simultaneous measurement of as many features as can be seen.

## Visual Validation: Guiding You Through the Measurement Process

ZONE3 previews offer visual validation of each operation before it's executed. You get immediate visual feedback so common errors and unintended consequences are avoided.



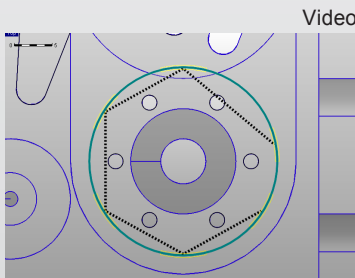
**Two different outcomes** based on the user's selection of Datums A-B-C (left), or A-C-B (right).



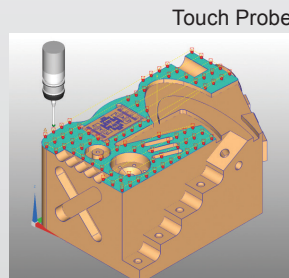
**Constructions** of bolt hole circle and maximum distance between two holes in that circle.

## Path Generation

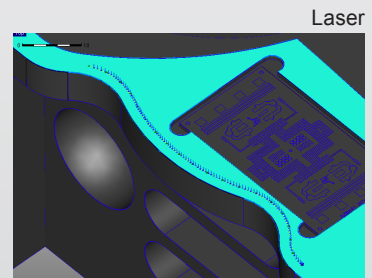
ZONE3 AutoPath uses CAD nominals to automatically create an optimal path for each measurement. AutoPath is fully multisensor capable. Use AutoPath with any sensor.



Video



Touch Probe



Laser

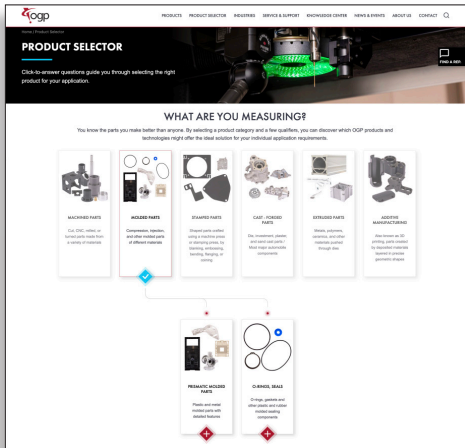
## Reporting

- ZONE3 recognizes ASME Y14.5 and ISO 1101 standards for GD&T.
- Animated tolerance zones\* allow you to visualize the specified tolerance condition.
- Specialized modules are available for Roughness, Gear, and Thread Evaluation
- Results can be output to PDF, Excel, or graphically to truly visualize the result.

\*US Patent Number 8 793 097 B2

## ADDITIONAL INFORMATION ABOUT OGP SYSTEMS

Explore a range of knowledge assets to help guide your research!



### Product Selector

This self-guided selector assists customers in identifying OGP products as a solution to their unique measurement needs.

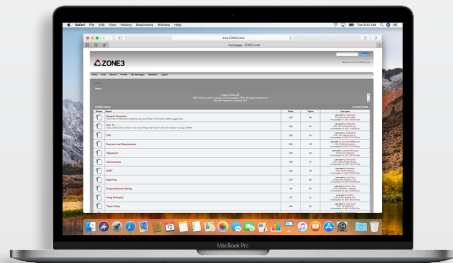
Customers select what kind of parts they manufacture, what size the parts are, and the tolerances they need to meet – the Product Selector suggests a featured system and other recommendations based on the customer's input.



### Knowledge Center

Find numerous white papers, case studies, tech reports and other educational material about dimensional metrology and OGP product solutions.

You can also quickly learn about OGP technology and solutions by watching product explainer videos.



### ZONE3.zone

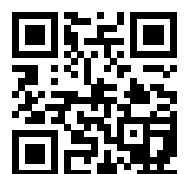
ZONE3.zone is the online community for ZONE3 users. Connect with fellow ZONE3 users and OGP Application Engineers to share metrology tips and get answers to your questions about ZONE3 features.



### Find a Sales Rep

OGP Authorized Representatives are metrology specialists, qualified to evaluate your measurement requirements and recommend the solution that best fits your needs.

Your local representative is ready to help you with product details, demonstrations, training, or purchase information.



**World Headquarters:** Rochester, NY, USA • 585.544.0400 • [www.ogpnet.com](http://www.ogpnet.com)

**OGP Shanghai Co, Ltd:** Shanghai, China

86.21.5045.8383/8989 • [www.smartscope.com.cn](http://www.smartscope.com.cn)

**OGP Messtechnik GmbH:** Hofheim-Wallau, Germany

49.6122.9968.0 • [www.ogpmesstechnik.de](http://www.ogpmesstechnik.de)

**Optical Gaging (S) Pte Ltd:** Singapore • 65.6741.8880 • [www.smartscope.com.sg](http://www.smartscope.com.sg)