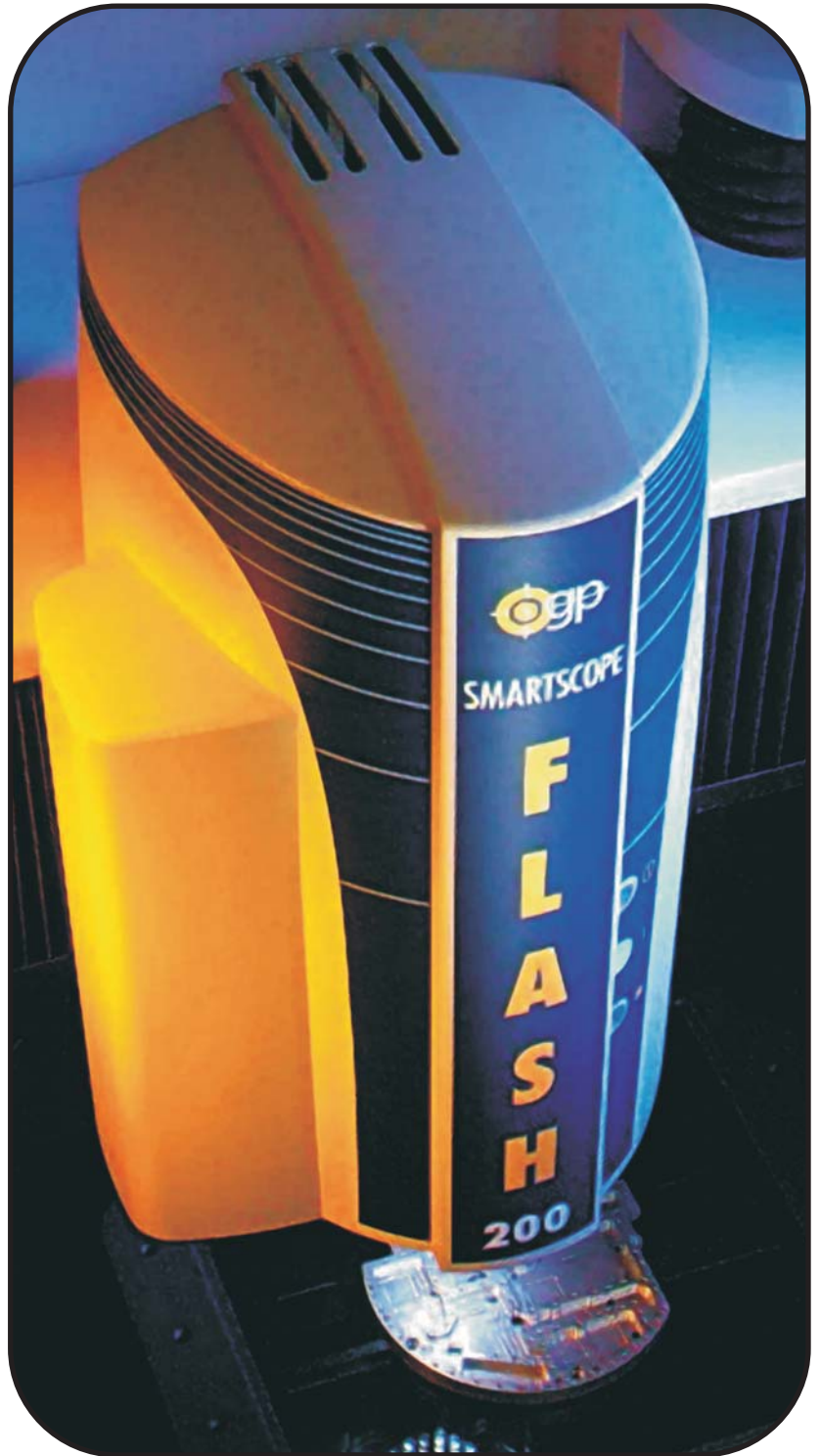# SMARTSCOPE
FLASH

all-in-one measurement solution

Optical Gaging Products & SmartScope Flash

Optical Gaging Products (OGP®) began in 1945 manufacturing optical comparators, charts, and fixtures. With rapid growth of that business, OGP became a global leader in optical inspection technologies.
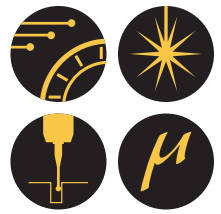
Always a trailblazer in metrology for manufacturing, OGP introduced the world's first video comparator in 1967. In sync with the needs of manufacturers, OGP pioneered multisensor metrology in 1986, introducing a single measuring system with vision, touch probe, and laser sensors.

To satisfy the ever-changing needs of a broad range of industries, OGP developed the first SmartScope Flash system in 1999 with an outstanding combination of technology and ease-of-use. Since that time, the product family has expanded to satisfy the quality requirements of manufacturers around the world.

At OGP, innovations continue, with advancements in optics, sensors, illumination, and transport design that keep OGP positioned as the leading global supplier of non-contact and multisensor measuring instruments . Today, thousands of SmartScope Flash measurement systems are used daily in more than 60 countries to help manufacturers improve quality, and do so "in a Flash."

info@ogpnet.com • www.ogpnet.com

OGP SmartScope Flash

High performance video measuring system — and more

Load a part. Start a measurement. OGP SmartScope Flash does the rest.

Automatic dimensional measurement frees you to focus on other productive activities as the Flash system handles your toughest measuring tasks. High-speed video technology tackles every edge. A Flash system with touch probe and laser sensors handles prismatic features and complex surface profiles with ease. Rotary indexers turn the part, revealing hidden features to the sensors. And all illumination and calibration criteria are maintained and utilized automatically as needed. SmartScope Flash is an "all-in-one" measurement solution that can make you more productive.
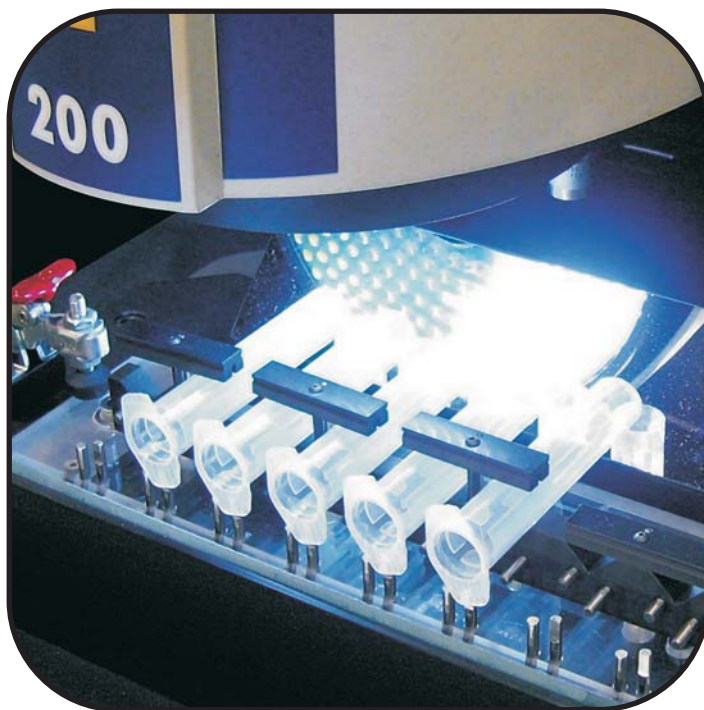
Use your SmartScope Flash to...

- **Verify dimensions**
- **Qualify parts & processes**
- **Reduce costs**
- **Remove bottlenecks**

MEASURE for success

Measuring affects everything

Dimensional measurement is one of the most important manufacturing processes. Use SmartScope Flash anywhere in the manufacturing process – from incoming inspection to first article inspection of a new part or process, to audit or 100% inspection, or as part of final, outgoing inspection.

The concept is actually quite simple. Magnifying important areas of a part allows the system to determine size and position of magnified features accurately. Closed loop stage positioning with high-speed motors allows the system to perform magnified measurements anywhere on a part. The system's software uses that data to provide high resolution measurement of dimensional characteristics anywhere in the measurement volume. And, once a measurement sequence is in a part program, it can run automatically every time – without human interaction.
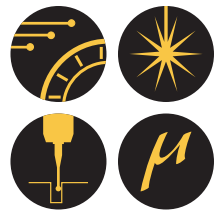
Do it all — in a Flash

The Flash name is no coincidence. Its core video measuring technology is fast – with software algorithms that acquire and analyze multiple data points simultaneously. A Flash system gives you the hard numbers you need to make important product and process decisions. SmartScope Flash can give you more measurements, and give them to you faster so you can make smart business decisions and stay in better control.

Productivity can be improved even further by outfitting a Flash system with laser, touch probe, and/or micro-probe sensors. On a multisensor SmartScope Flash system, you get all the measurements you need in one place, rather than having to re-stage your parts on multiple machines. And when you mount multiple parts on specialized fixtures for all-at-once measurement on a Flash, productivity can be improved even more.

SmartScope Flash 500 system with sets of fixtured parts ready for automatic, unattended video and laser measurement.

WHY MULTISENSOR?

Certain features are easier to measure with one sensor than another. For example, consider the blind countersunk hole illustrated in the figure to the right. With the part mounted in one position, video excels at edges so it can easily measure chamfer diameters B, C, and D. To measure the angles of B and C to A, a laser scan is the best tool for the job. It can acquire data as it scans across surfaces. With its small spot size and rapid data acquisition speed, laser scans provide sufficient data points so the resultant profiles can be analyzed with software to measure the angles of the chamfers.

To determine if Bore D is perpendicular to A presents a different type of measurement challenge. Video can measure the diameter at the top of the bore, but it cannot image the walls of the bore. Laser scanning will not work either because D presents no surface to reflect the laser light. In this case, a touch probe is the right sensor. It can extend into the bore and acquire data points anywhere on bore D, fit the data to a cylinder and intersect it with A.

Finally, the depth of the bottom of the bore, E, may be beyond the focus range of video or laser. A touch probe with appropriate stylus can reach that surface. By using the most appropriate sensor for the job, accuracy, throughput, and capabilities are optimized.
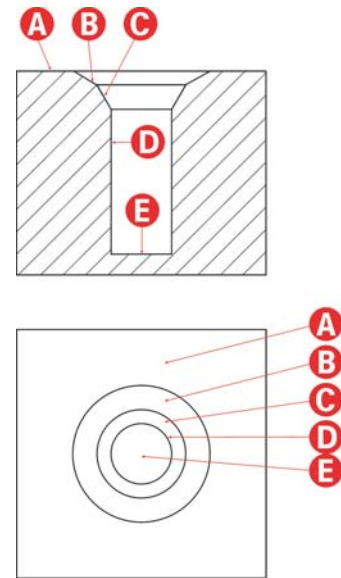
Get complete 3D measurement data from a single measuring machine. Video, contact probes, laser, and micro-probes combine for total part characterization, with better accuracy, in a fraction of the time it would take to do on separate measuring systems.
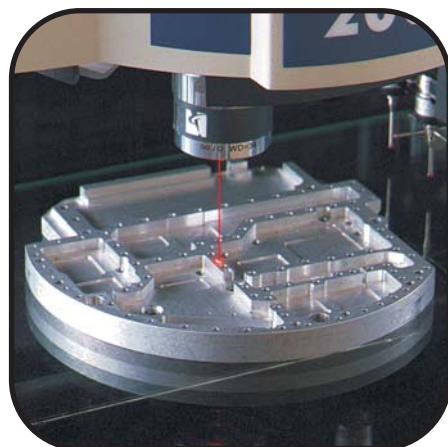
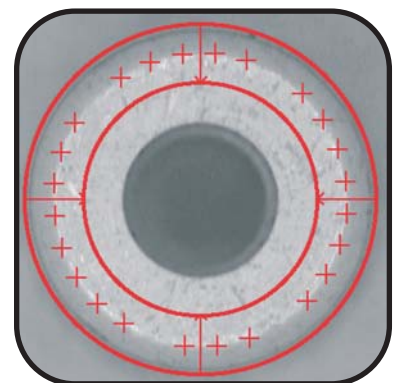# VIDEO measurement

Seeing is believing

Every Flash is an excellent video measurement system. Seeing – and measuring – with advanced OGP video technology takes you to a higher level of understanding.

OGP has introduced innovations in video measurement technology for more than 30 years. Video measurement by SmartScope Flash systems is a multi-faceted process that includes computer control of motorized zoom optics, XYZ translation stages, rotary indexers, and LED illuminators, together with high-powered edge detecting and focusing algorithms to measure fast and without contact. Every SmartScope Flash system uses the latest video technology to provide reliable, non-contact measurements of size, position, straightness, flatness, diameter, radius, and much more.
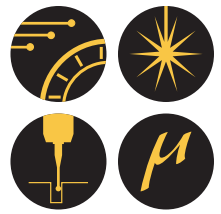
Choreographed stage motion

Simultaneous motion of DC servo-driven X, Y, and Z stages gets every measurement location into position fast. Precision linear scales with sub-micron resolution keep track of point relationships throughout the system's measurement area, ensuring positioning repeatability.

The convenient joystick controller not only makes it easy to drive the stages to any location, but it also lets you set light intensities.

Load, illuminate, magnify, and measure your part. Non-contact video measuring is fast, accurate, and repeatable.

METROLOGY OPTICS

Zoom up for accuracy

In video measurement, image is everything – since it is the *image* that is measured. System optics must be of excellent quality to present an undistorted image to the camera. Our patented AccuCentric® 12:1 motorized zoom lens provides high quality images with minimal distortion, with the convenience and accuracy of programmable, variable magnification that is calibrated.

Magnification matters

Sometimes you need to look closer to see the big picture. The 12x AccuCentric lens in every SmartScope Flash makes it easy to measure at the optimal magnification for every situation. Zoom up on small details to maximize measurement data density, then easily change magnifications as needed. Get measurement versatility without the limitations of a fixed lens or the limited choices of turret-based lens systems.

Auto-calibrating technology

A large magnification range is useful, but precision measurement depends on a calibrated field of view. OGP AccuCentric technology calibrates the lens system at every magnification change. The process is automatic, accurate, and fast. With AccuCentric, it's like having an entire series of calibrated fixed lenses — without the need to change them between measurements — without the cost.

"...advanced OGP video technology takes you to a higher level of understanding."
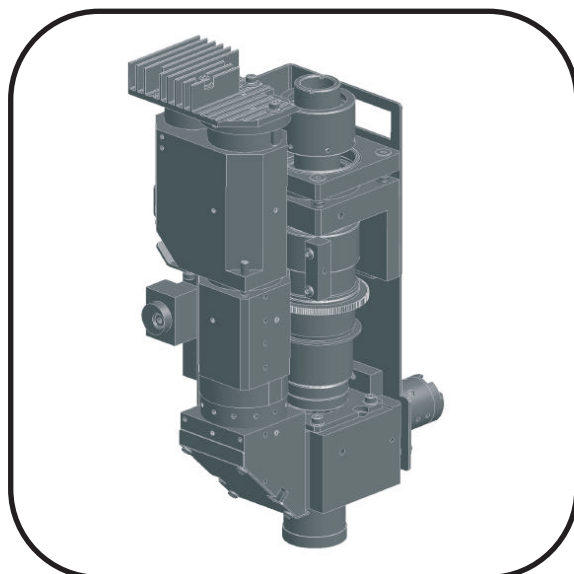
The motorized 12x AccuCentric auto-calibrating zoom lens, used in all SmartScope Flash systems, provides crisp, clear images across its entire magnification range.

VIDEO measurement

IMAGING

Converting the image

Images relayed by the 12x AccuCentric zoom lens are converted by the solid state camera to electrical signals. Signal levels from pixels in the camera's detector array are analyzed, with sub-pixel resolution, to locate edges with great precision so they can be measured accurately.

Leading edge performance

OGP metrology software performs edge detection that is highly accurate and repeatable. Time-tested and field-proven image processing algorithms discern the slightest variations in intensity and contrast to distinguish true edges from extraneous debris and burrs, providing accurate, repeatable measurements of real world parts.

ILLUMINATION

Get the best image quality with the variety of OGP lighting technologies available in every SmartScope Flash. Whether surface lighting from directly above or at oblique angles, or uniformly distributed profile lighting that tracks the optical system during stage motion, image contrast and intensity are easily optimized for every situation with innovative OGP illumination technologies.
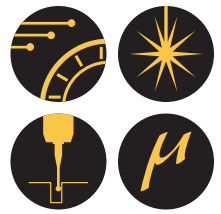
Programmable illumination

Reliable measurements require consistent system performance. Programmable illumination enables every part to be measured with the same lighting conditions, regardless of who operates the Flash system. All illumination settings are retained in each part program so they are repeated at each step in a measurement routine.

Substage backlight

Profile illumination is important for measuring part edge contours, through-holes, slots, and other features that pass through a part. Backlighting is optimized on every Flash system through the use of sophisticated LED technology. The LED backlight illuminators on every Flash system are superior to filament-based lamps due to their intensities, consistent color temperature, faster response time, and longer lifetimes.

Coaxial surface illuminator

Many times, illumination from directly above the part, inline with the optical axis of the system, is most effective at optimizing surface detail. The coaxial surface illuminator in SmartScope Flash uses white LEDs for bright, uniform lighting that maximizes image contrast at any magnification.

Grid projector

Mirror-polished and transparent parts have no surface structure to bring into focus. The available Grid Projector uses an LED source to project a pattern onto the surface of a part. Flash systems are designed so the surface of the part is in focus when the projected grid pattern is in focus.
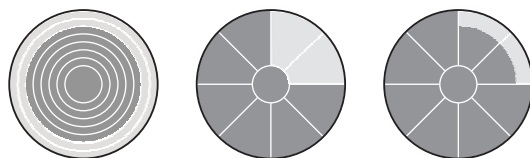
SmartRing light

When features or edges that need to be measured are on the surface of the part, the patented SmartRing™ LED illuminator is the tool of choice. It can direct light from its white LEDs at different directions, different angles, and different intensities. Illuminate features from the side to highlight their edges. Measure one edge with light from one angle and another with light from the opposite direction – without moving the part. With SmartRing, low contrast features stand out for increased measurement accuracy.

The SmartRing illuminator has concentric rings of LEDs divided into eight segments. Individual rings, segments, arc segments, or combinations can be illuminated. Its patented Fresnel lens focuses the light at the same position as the AccuCentric zoom lens for optimal imaging and simple operation. The lens allows it to direct light at all angles and directions while maintaining a constant distance from the part. For optical configurations that extend the working distance, a Fresnel lens with a longer focal length is easily interchanged.
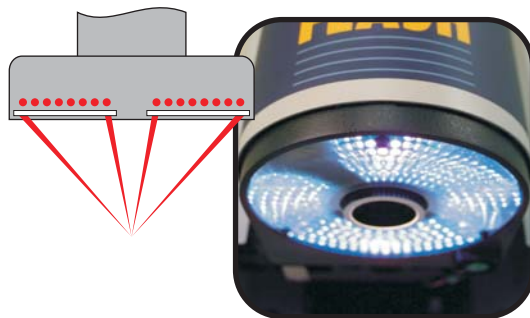
The Fresnel lens at the front of the **SmartRing light** enables a multitude of surface lighting conditions with the convenience of a fixed working distance.

SmartRing LEDs can be lit in rings, sectors, or any combination to highlight any edge.

SmartRing-highlighted edges are easier to see – and measure.

Without SmartRing   *With SmartRing*

MULTISENSOR options

Do more with your Flash system

Video measurement is fast, versatile, and extremely capable. Yet parts can have features that video simply cannot measure. For example, curved surfaces are better measured with a scanning laser, while a contact probe is better able to measure the walls and bottom of a bore. Other types of features present measurement challenges, too.
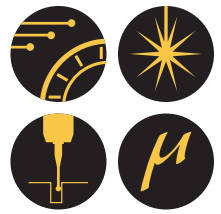
One machine, all the tools

Adding multisensor capabilities to an OGP SmartScope Flash system actually makes measuring parts easier and more efficient. Fixture a part once, and get detailed measurements from a variety of sensors with their individual strengths and characteristics. Use video for edges and focus points, a touch probe to reach features inaccessible to video, scan a laser or white-light probe for surface shape data, and use a micro-probe for micro-scale features from EDM and other manufacturing methods. Since a Flash system easily switches between sensors during an automatic measurement routine, it does all the work while you are free to manage other parts of your business.

Several machines in one

You can buy a separate video machine, CMM, and laser scanner system. But each single-sensor machine requires its own unique fixture, software, and a skilled operator to run it. Lean manufacturing is more difficult with multiple measuring machines because parts can pile up by each one, delaying important production decisions and possibly jeopardizing quality. Increase throughput and remove bottlenecks by doing the work of several of those other machines in a single set-up on a multisensor OGP SmartScope Flash system – the *all-in-one* measurement solution.

Get accurate, repeatable measurements regardless of how many sensors are used, how many measurement steps are involved, or how many times sensors are changed during a routine.

CONTACT MEASUREMENT

Measure hard-to-reach features

Sometimes you just have to touch a part to measure it. Contact probes for OGP SmartScope Flash systems add versatility to measurements, reaching and probing features that are beyond the range of video measurement. Reach into bores, slots, and trenches to provide angular and dimensional relationships to other surfaces.

Touch trigger probe

You may have a CMM you use for routine measurements. You can free up that CMM by adding probing as part of a SmartScope Flash measurement routine. With the styli you need in a change rack, it's easy to go from video to trigger probing during an automatic measurement routine – with the part fixtured once. The metrology software retains touch probe and video data points in measurement space so constructions using any or all of that data are possible – and simple to do.

"...multisensor capabilities...actually make measuring parts easier, and more efficient."
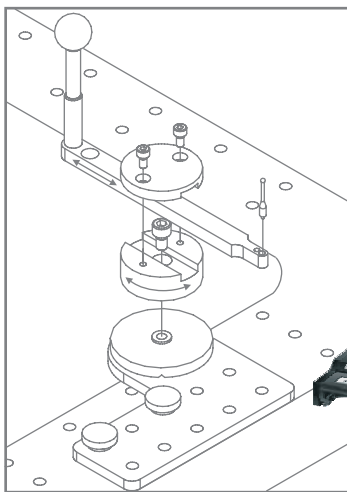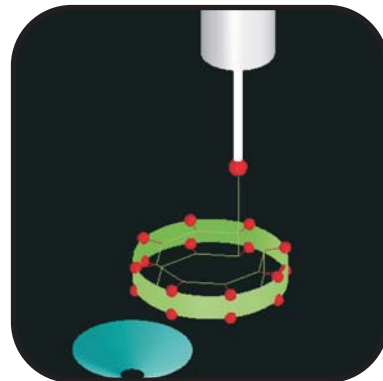
Calibration sphere and change racks make touch probing accurate and easy.

Touch trigger probes reach features that are beyond the range of other sensors.

MULTISENSOR options
LASERS

Surface scans and more

Laser light can be focused with high precision and scanned across surfaces to derive high resolution surface profiles. Use it to probe points on surfaces like a touch trigger probe, but without surface contact and with a much smaller "probe" size. Or scan the laser spot across the surface, tracking changes in surface heights at high resolution. Tight integration with the system mechanics keeps the laser in focus as it rapidly scans the part surface.

When a laser is scanned, both programming and measurement times are kept to a minimum because there is no need to "teach" the laser about the part prior to the scan. With just a few points, intelligent algorithms automatically drive the laser to follow the part contour, collecting data at a user-defined velocity and data-sampling rate. A variety of lasers are available.

TTL laser

The Flash TTL (through-the-lens) laser is completely integrated into the system, coaxial with the video optics. Since the optics and the laser are coaxial, an area on a part can be imaged, measured with video, and scanned with a laser with minimal stage motion. In addition, since the TTL laser is internal, it can be activated instantly. The narrow operating angles of the TTL laser allow it to access surface areas that are recessed or located adjacent to vertical surfaces – areas where light might be blocked when using a triangulation laser.
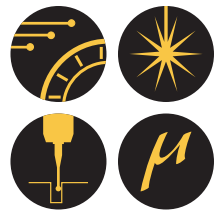
DRS laser

DRS (Digital Range Sensor) lasers are self-contained modules that use laser triangulation to measure surfaces. Offset from the video optical axis by a fixed distance, a DRS can be deployed when needed and retracted for storage automatically during a measurement routine. There are DRS lasers for specular (polished) surfaces and for diffuse surfaces, with a range of resolutions, capture ranges, and working distances. DRS laser modules are user-interchangeable to accommodate changing needs.

Laser pointer

The laser pointer available on Flash systems can help when choosing part locations for video measurement. Simply hold down the switch on the joystick, and move the stages until the spot from the pointer is on the feature of interest. Then you know that after proper focusing, that feature will be within the optical field of view.
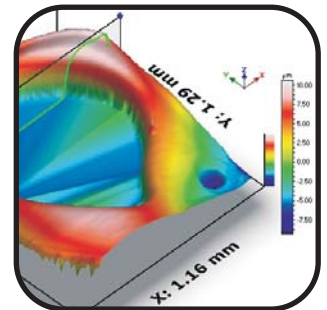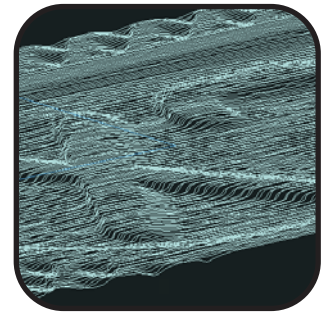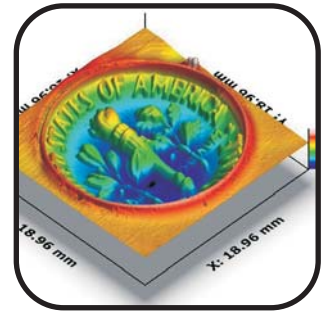
SPECIALIZED SENSORS

For the smallest, most sensitive features

As manufacturing technologies advance, tolerances are getting tighter, while parts and part details are getting smaller. Measuring this new breed of parts is a challenge facing many manufacturers today. Existing metrology systems may not be capable of providing the necessary measurements. OGP continually advances measuring technologies to support the newest manufacturing technologies. Micro-probes ad high resolution sensors are examples of our commitment to advancing metrology.

Rainbow Probe

The Rainbow Probe™ is a scanning white-light sensor that provides nanometer-level resolution of surface heights without contact. The self-contained probe projects light onto the part. Shifts in the color of light reflected from the surface are directly related to changes in height as the probe scans a surface. Its 2 µm spot size and sub-micron measurement resolution enable the Rainbow Probe sensor to measure minute imperfections in surface contours. Like all the sensors available for SmartScope Flash, the Rainbow Probe can be called upon at any point in a measurement routine, and its data used with those of any other sensor to measure important dimensional relationships.

Feather Probe

Probe tiny and fragile materials with the barely-there touch of the Feather Probe™ sensor, with styli as small as 0.125 mm in diameter. In concept like a miniature touch trigger probe, proprietary sensing technology discerns stylus contact with a surface using a minuscule measurement force of less than one milligram (depending on stylus diameter). The Feather Probe deployment mechanism keeps the sensor safe from possible mishandling when not in use. Applications range from intricate details in precision cast metal and rubber parts to slots and trenches created by the precision EDM process.

Interposer

A unique blend of video and touch probe technology, the Interposer consists of a slender shaft with a probe ball of a known size on its tip. In use, the probe ball is brought into the optical field of view and lightly into contact with a feature. When the centroid of the ball moves, contact has been made with the feature. Once contact has been made, automatic video measurement measures the position of the probe ball. Since the probe ball diameter is known, the tangent point where it contacts the part feature can be determined precisely. Since Interposer is brought into the field of view only when needed, it does not interfere with other types of measurements, enhancing productivity. Also, parts fixtured for video measurement can be measured with Interposer without refixturing. Interposer is often perfect for measuring tiny internal features, such as grooved recesses within bores.

METROLOGY software

OGP Measure-X® – for the way you work

We know a positive SmartScope Flash user experience depends on the metrology software. This is where OGP excels.

Powerful metrology software can be easy-to-use

Measurement systems with so many capabilities need not be intimidating to use. The intuitive Measure-X interface has a logical design that is understandable, even to new users. Needed tools are in the icon toolbox. Just point and click the mouse to measure points, lines, radii, diameters, angles, intersections, widths, distances, spheres, planes, edge contours, centroids, and more. With its full GD&T support, it is easy to verify that parts are properly dimensioned and within tolerance. Select sensors. Set operating conditions. Measure in the image window or in the model window, set axis alignments, define datum features, and create constructions. Put it all together in a measurement routine and it runs automatically with a mouse click.

It starts with image processing

Measure-X gives you the best possible video measurements with the least amount of effort. Just point - click - measure - with tools like FeatureFinder™, Strong Edge, Weak Edge, Autofocus, Centroid, Edge Trace, and more.

### Metrology software that is multisensor-capable

Measure-X makes it easy to use all the sensors on a system. With multisensor data, you get more information in a single measurement routine.

### Speed workflow with CAD import

With optional CAD import, you can import a CAD file into a Measure-X routine. Measurement steps are automatically generated from the CAD file, including associated nominal values. Beginning with a CAD file reduces programming effort, speeds up routine creation, and streamlines workflow.

### Made for doing business where you do business

SmartScope Flash systems are ready for the world. Ease of use is enhanced with the user interface available in more than a dozen languages, including English, Spanish, French, German, Portuguese, Italian, Swedish, Dutch, Japanese, Korean, and Chinese. Measure-X makes SmartScope Flash systems easy to use wherever parts are being manufactured.
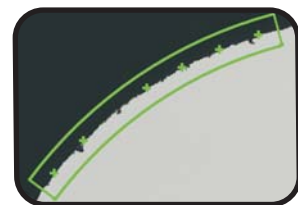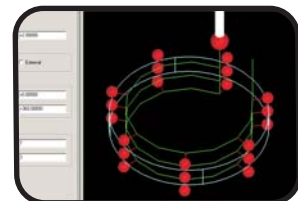
FeatureFinder.™ Click a few points and Measure-X identifies data points along circles, arcs, and lines.
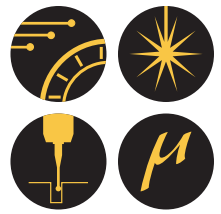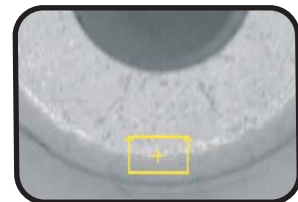
Weak edge. The Measure-X Weak Edge tool finds localized minimum or maximum data points, to help measure extremely faint edges.
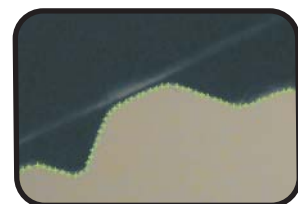
Edge Trace. Automatically scan an edge or perimeter, within or outside the field of view.

AutoPath. Automatically generate a touch probe path using previously measured points. Increases productivity and accuracy by automatically adding touch probe points to feature measurements.

Interface your way

Measure-X is ready to work your way. See all important information on one monitor at once, or use the familiar tabbed user interface. Dual monitor mode lets you arrange data and enlarge the video image.

Full-featured view arranges important information on a single monitor. Keep track of system operation, watch data update, and view tabular and graphical data all in plain view. Classic view continues the look and feel of the popular Measure-X software already used on many OGP SmartScope systems.

With dual monitor mode, you can move data, graphics, or the image window to the second monitor. You can rearrange and resize them to show the detail important to you.
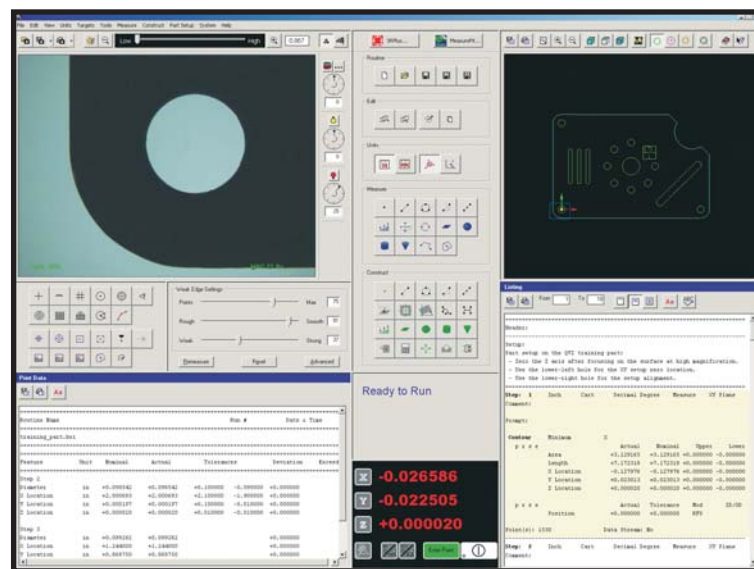
Full-Featured View. Choose this view to monitor video, graphics, and results in one place, so you can easily keep track of it all.
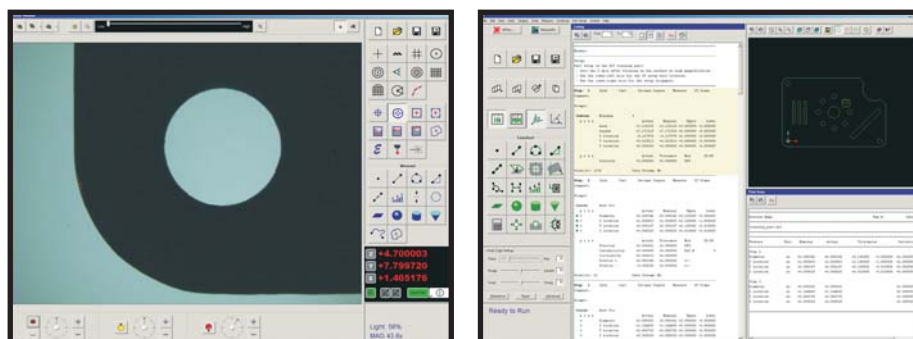
Dual Monitors. This view rearranges windows and spreads them out over two monitors, to help you see details that are most important to you.

METROLOGY software

MeasureMind® 3D MultiSensor – do more

SmartScope Flash systems are available with MeasureMind® 3D MultiSensor, OGP's premium metrology software that does even more with its multisensor capabilities. Rich 3D graphics that can show tolerance conditions, and the ability to rotate the coordinate system when using single and dual rotary indexers are but two examples of MeasureMind 3D MultiSensor functionality.

MeasureMind 3D makes it easy to acquire data from any sensor and to use that data for detailed analysis. Interaction with the graphical model lets you view it from every perspective.


Total integration

With MeasureMind 3D MultiSensor software, every angle is covered. Control single or dual rotary indexers to bring hidden features within reach of the system's sensors. Retain the spatial relationships of all sensor data, rotating the model as required to visualize data relationships. MeasureMind 3D MultiSensor software easily accommodates complex geometrical forms – cylinders, cones, spheres, planes, and intersections – and their relationships for high-powered, detailed measurement analysis of your most complex parts.
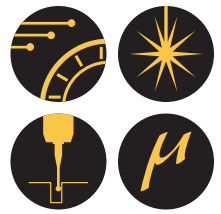
A new dimension of accuracy

MeasureMind 3D MultiSensor software builds the model of measured points as the part is measured, so you see data relationships as they develop in a measurement routine. Choose to display measured features, nominal features, raw data points, or any combination. Models can be color coded to indicate in- or out-of-tolerance conditions. View the model as orthographic, isometric, 3D wire frame, or 3D with rendered surfaces. Use the mouse to zoom in and rotate the model to see important details. Perform high level calibrations of sensors, volumetric accuracy, nonlinear FOV accuracy, and parfocal accuracy.

All the tools you need

MeasureMind 3D MultiSensor software has all the right tools for your most elaborate measurements. Select a feature to in the model window to edit its measurement attributes. Easily put information into its most manageable form with a choice of data reduction methods.
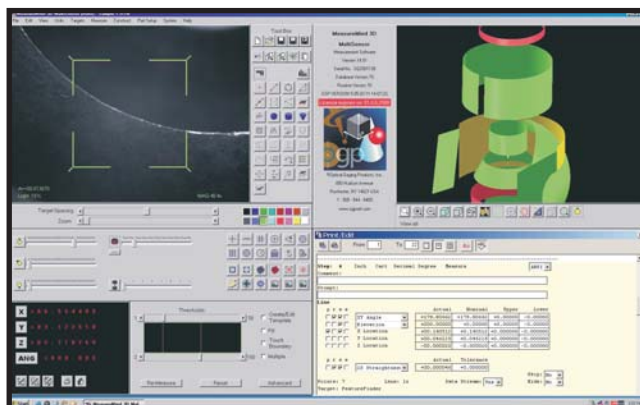
Video metrology, and more

MeasureMind 3D MultiSensor software is actually more than "multisensor" and more than "3D." Developed from the beginning to work with OGP multisensor metrology systems, MeasureMind 3D accepts data points from any sensor on the SmartScope Flash system. It has all the necessary tools for every sensor you might use. You never have to compromise to take advantage of the benefits of multisensor measurement with MeasureMind 3D MultiSensor from OGP.

The results: multi-faceted dimensional measurements that really add depth to the SmartScope Flash metrology mix – and take your quality and manufacturing processes to new levels.
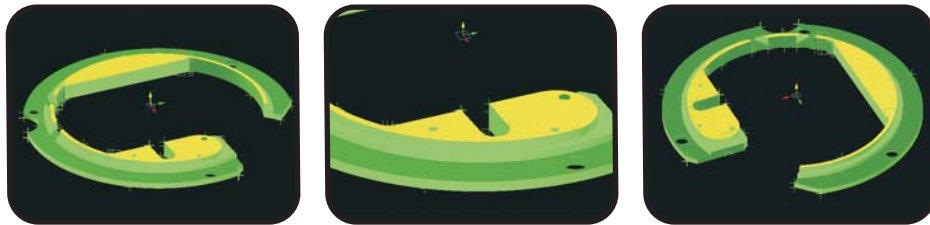
Use the mouse to zoom in on a feature of interest, or rotate the model to reveal something previously hidden from view.
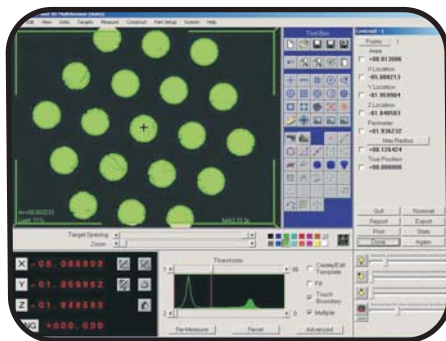

Advanced Centroid defines and analyzes several irregularly-shaped features within the field of view simultaneously.
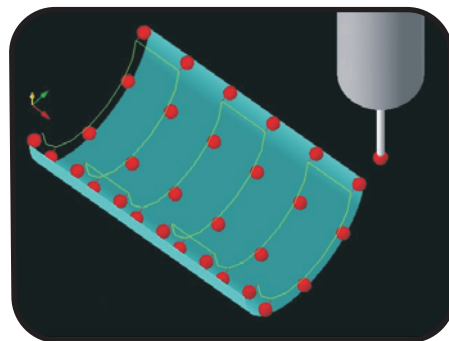
Autopath defines a touch probe path based on a minimum of user-selected points.

The **SoftSectioner™** option adds a video sectioning capability to SmartScope Flash. SoftSectioner uses a proprietary algorithm to rapidly profile all the focus points in a user-defined area – without contact.
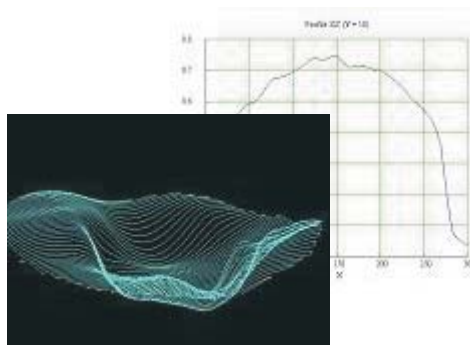
SYSTEM guide

Which SmartScope Flash is right for me?

Because parts that need to be measured come in a wide range of sizes, Flash systems do too. The capacity of a system for first article inspection on tiny Swiss-turned parts is different than for 100 percent qualification of large flat-panel display components. Yet there's a Flash system that's just right for both applications. On any model Flash system, fixture the part once and you'll improve productivity. From a compact benchtop machine to a system with 1.5 meters of stage travel, there are models right for most manufactured parts, including parts like yours.

Every Flash system is multisensor-capable. Each one can lower your total capital equipment costs by combining more than one type of metrology into a single system. Our professional staff of application engineers and factory-trained local representatives can help you select the right model for your requirements.

A range of sizes...

As shown below, SmartScope Flash comes in a range of sizes. From the benchtop Flash 200 to the floor model Flash 1552 and everything in between, OGP has a SmartScope Flash to meet your floor space and measurement volume requirements.

Flash	X (mm)	Y (mm)	Z (mm)
200	200	200	150
250	300	150	200
302	300	300	250
500	500	450/610	200/300/400
1000	1000	600	200/300/400
1500	900	1500	200
1550	1240	1500/1800/2000	200
1552	1500	1500/1800/2000	200

SYSTEM guide
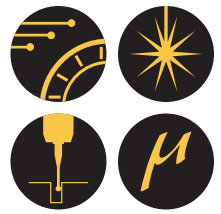
Common features

Every SmartScope Flash model has an extensive list of common standard features and associated benefits.

Feature	Benefit
OGP Video Measurement Technology	Years of OGP innovation and experience using video to measure edges guarantee accurate and reliable measurements
12x AccuCentric auto-calibrating zoom lens	Clear, sharp cailbrated imaging over a large magnification range
DC servo driven stages	Fast, repeatable 3-axis positioning
LED illuminators	Bright, white light; long lifetimes
0.5 or 0.1 μm scales in all axes	Accurate, repeatable location information anywhere within the measurement volume
Measure-X metrology software	Measurement power and ease of use for both program creation and system operation
Innovative software tools	Tools like FeatureFinder and Edge Trace automate edge detection and data analysis to get more information faster
Multisensor integration	OGP integrates video and optional laser, touch probe, and micro-sensors for fully automatic operation with no compromises

SYSTEM guide

200

SmartScope Flash 200
World's most popular multisensor system

The mechanically innovative SmartScope Flash 200 system can transform your workbench into a personal multisensor metrology station. Flash 200 packs 200x200x150 mm of measuring volume into the ideal space-saving design for product and process development, process monitoring, and in-process and final inspection. It's no wonder that the Flash 200 is the world's most popular multisensor metrology system.

Space-saving innovations

The Flash 200 system features an "elevating bridge" design where X-axis motion is elevated by Z-axis motion that moves on precision ground shafts. Part motion is limited to the Y-axis. The entire system, including computer, takes up less than 0.3 cubic meters of space. Just right for big measurement performance on the shop floor.

250

SmartScope Flash 250
**Video accuracy, mulitsensor capability**

Offering great value in a benchtop metrology system, the SmartScope Flash 250 is a solidly-built compact system with large X travel and capabilities formerly found only on floor model systems. Its sturdy construction allows Flash 250 to handle parts as heavy as 25 kg. In addition to providing accurate video metrology, Flash 250 also supports a variety of multisensor options, including touch probes, micro-probes, and TTL or off-axis lasers.

Field-proven cantilever design

The Flash 250 system features 300x150x200 mm XYZ travel with an XY stage that is unobstructed on three sides, for easy loading and unloading of parts. Its heavy cast base, rigid U-shaped steel column, and Y-axis center drive are production-floor tough.

SYSTEM guide
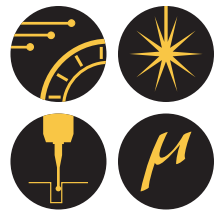
302

SmartScope Flash 302
Small footprint, large capacity

Rugged and ready for anything, the SmartScope Flash 302 is also an "elevating bridge" design system, but with a larger measurement capacity than the Flash 200. Its metrologically stable construction allows Flash 302 to handle parts as heavy as 30 kg and brings big-machine capabilities to small spaces. Think Flash 302 for maximum metrology productivity that fits where you need it.

Ready to measure anywhere
The Flash 302 system features generous 300x300x250 mm XYZ travel but is the most compact system of any with comparable travel. The system is configurable with a variety of multisensor options for true measurement versatility.

500

SmartScope Flash 500
Small footprint, large travel

Customers asked for a large XY measurement range with a small system footprint. SmartScope Flash 500 delivers! The bridge-type design structure supports X-axis travel that does not extend beyond the width of the system. Instrument optics and sensors are fully and evenly supported across the entire range of travel. The part moves only in the mechanically isolated Y-axis. Precision DC servo motors provide fast and repeatable positioning, making gross moves quickly and small, precise moves accurately.

Optimal capacity
The unique design of the Flash 500 makes it a popular choice as the "go to" system for a wide range of parts. The system has a 500x450x200 mm stage travel, with 610 mm Y-axis travel available. 300 mm Z-axis travel or 400 mm Z-axis travel options extend measurement versatility. The variety of optional measurement volumes accommodates large parts or fixtures, and facilitates the use of rotary tables.

SYSTEM guide

1000

SmartScope Flash 1000
Moving gantry system

The uniquely designed SmartScope Flash 1000 metrology system makes easy work of complex measurements on large, heavy parts. Its high-load capacity, side-supported Y-axis stage supports up to 60 kg measurable over a 1000x600x200 mm range. Its innovative moving gantry design offers a large measurement volume without compromising measurement performance. The instrument's optical system and sensors traverse a rigid granite rail in the X axis, while the part moves in the Y axis on rails attached to a thick granite base supported on a rigid three-point steel frame for metrological stability. Precision mechanical bearing XYZ stages with DC servo motor drives ensure rapid, smooth part positioning. Optional 300 mm or 400 mm Z travel provides the potential to characterize a wide array of large parts.

1500/1550/1552
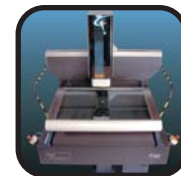
SmartScope Flash 1500, 1550, 1552
#### Moving bridge systems

With the SmartScope Flash 1500/1550/1552, a distinctive moving bridge design offers large measuring ranges and a number of benefits. Massive granite platforms support the entire X-Z stage assembly which moves along parallel tracks in the Y-axis. The unique DC motor driven capstan drive speeds measurement of locating points and other critical features at large distances from one another. These large-capacity systems are perfectly suited for parts such as LCD panels, plasma displays, circuit boards, and multi-component fixtures.

All three of these Flash models offer 1500 mm of Y-axis and 200 mm of Z-axis travel. X-travel for Flash 1500 is 900 mm, for 1550 is 1250 mm, and for 1552 is 1500 mm. Flash 1550 and 1552 are both available with 1800 mm or 2000 mm Y-axis travel for even more measurement versatility.
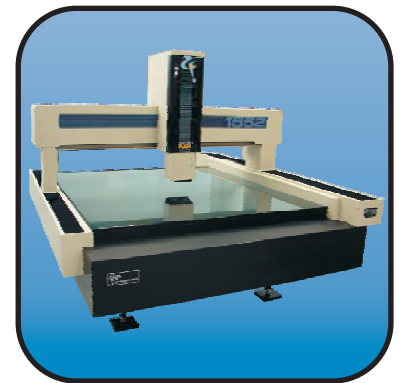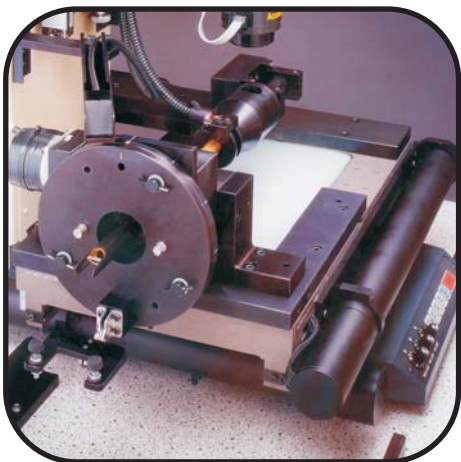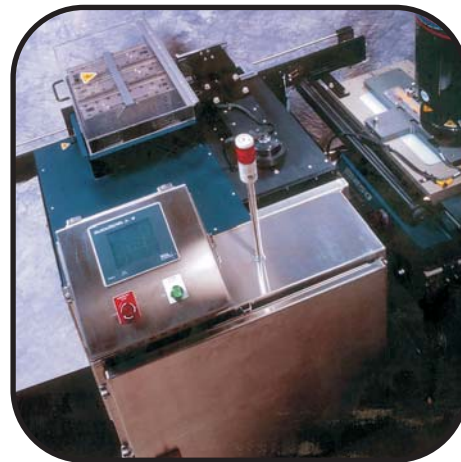
SYSTEM guide
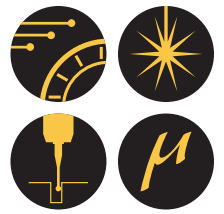
CUSTOM SOLUTIONS

If our standard systems don't meet your needs, we can provide custom solutions. Whether turnkey pick-and-place parts handlers, special fixtures, custom enclosures, or totally unique measurement systems, we have the skills and expertise to help you meet your measurement goals.

ROTARY indexers

All rotary indexers make it possible to measure a part in different orientations without removing the part from a fixture. Simply drive the rotary to the position you want and measure.

Single-axis rotaries/4th axis

Miniature Servo

The Miniature Servo (MSR) rotary uses a worm gear drive for positional accuracy. Rotate small parts to minimize handling and get more useful data.

MicroTheta

The MicroTheta™ (MTR) rotary indexer is a high resolution closed loop positioner, with accuracy rated at ± 5 arc seconds. With MicroTheta, parts can be automatically rotated within a measurement routine to present a different view to the system, without the need to re-measure datum features after rotation.

MSR

MTR

MTR/MSR

Dual-axis rotaries/4th & 5th axis

Two rotary indexers may be combined with their axes perpendicular to each other to add a 4th and 5th axes of rotation for increased part positioning options. For example, you can combine MicroTheta and Miniature Servo rotaries to provide rotary motions in perpendicular axes. The MicroTheta rotary rotates the Miniature Servo, which in turn holds the part being measured. MeasureMind 3D MultiSensor is required, and fully tracks the rotation of multiple XYZ coordinate systems.
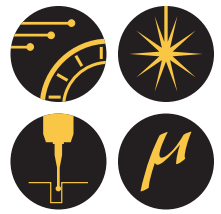
SOFTWARE options

All-in-one is all about capabilities

SmartScope Flash systems are extremely capable. And they can do more! A variety of options extend a Flash system's capabilities as a multifunctional unit, with additional tools for your metrology strategy.

Fitting and GD&T analysis

SmartProfile® is a 3D best-fitting software package with ASME Y14.5 and Y14.5.1 GD&T compliance. SmartProfile takes point clouds of data from part measurements, merges that data with the nominal CAD model of the part with GD&T tolerances, and automatically performs a results evaluation based on those tolerances. SmartProfile then compares measured data with the nominal model and determines if measured features are within tolerance. A color-coded chart indicates the status for each measured feature in a go-no go format, and also shows the magnitude of tolerance deviation.
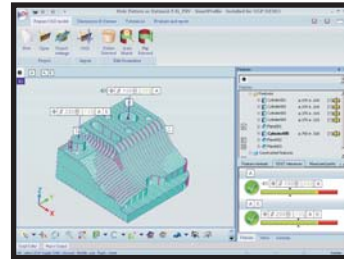

2D/3D fitting

SmartFit® 3D is an interactive 2D/3D fitting package which provides fast and accurate analysis of conformance to shape, form, and dimensions of rigid parts. It compares measured data to the nominal model of the part, as represented by a CAD file. SmartFit 3D can simultaneously compare measured surface points and point clouds to CAD-defined surfaces.
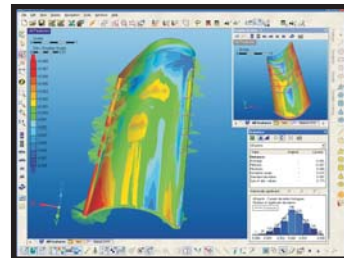

2D fitting

MeasureFit® Plus helps when tolerances are tight and the right fit is essential. This powerful fitting package simultaneously analyzes all measured part features and compares them to a nominal template created from a CAD file. Color graphics vividly depict how well the measured data fits the template. MeasureFit Plus makes it easy to verify compliance to the design.
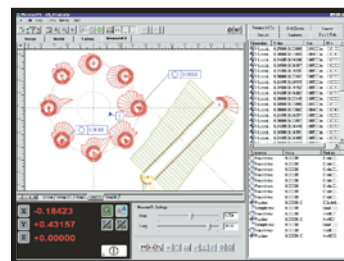

CAD import

SmartCAD® 3D imports CAD files to speed creation of MeasureMind 3D MultiSensor part routines on your Flash system, or offline, right at your desk. Simply import an IGES or other common format 3D CAD file. Then use SmartCAD to select features to measure, set lighting and magnification, and more. The result is a MeasureMind 3D routine that is ready to run. Use your design files to create measurement routines.
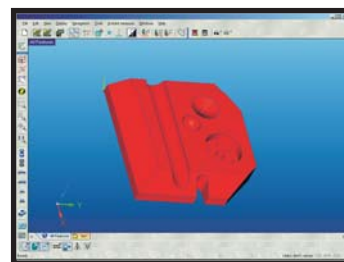
SOFTWARE options
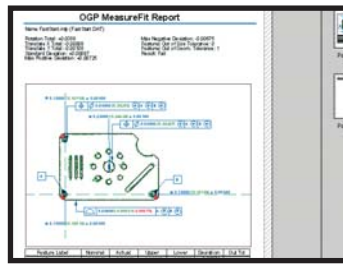
Reporting & Statistical Process Control

SmartReport® powered by QC-Calc™ collects measurement data and outputs them in ways that are simple to share and understand. SmartReport works automatically in the background — gathering, formatting, and outputting data while your routine is running. Monitor your inspection process to keep it in control with SPC. Database creation, data collection, and data display have been fine tuned to make the interface automatic. Includes Control Charts; Process Charts; Built-in Gage R&R; and reports such as First Article, Raw Data, Statistical Summary, and Non-Conformance. Formatted printed reports can be customized with images and graphs.
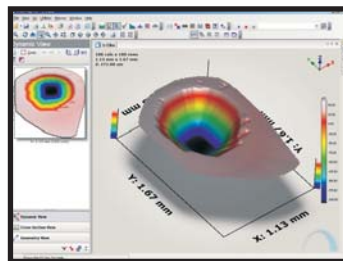
Surface mapping & analysis

TrueMap™ is a surface visualization and analysis software that accepts point cloud data from a multisensor Flash system. Display color surface maps of your data and calculate volume and cross-sectional geometry of specific features. Click and drag the mouse to interactively rotate, scale, pan, and zoom the view of the data.
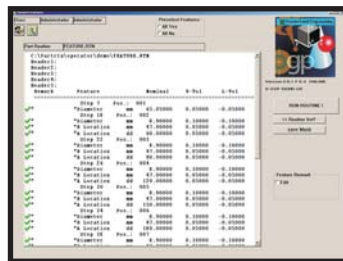
Measurement routine subsetting

SmartFeature™ allows you to measure specific features that are part of a long measurement routine without running the whole routine, and without changing it. It automatically measures all datum and reference features as required. A scrolling window displays measurement results upon inspection completion. Enterprise version adds security features ideal for FDA 21 CFR Part 11. SmartFeature requires MeasureMind 3D.
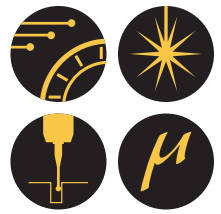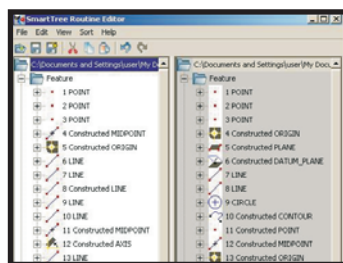
Measurement routine viewer/editor

SmartTree™ allows you to view and edit measurement routines offline. This allows your SmartScope Flash system to remain productive by measuring rather than programming. Use SmartTree for database changes, to edit steps one at a time, for global editing, and to cut and paste measurement steps. SmartTree is compatible with all OGP metrology software.
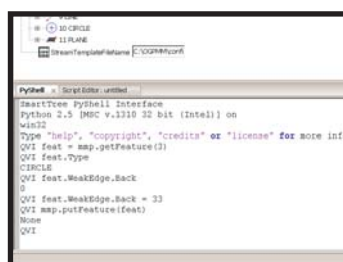
Scripting

SmartScript™ lets the advanced user write customized scripts using the Python™ scripting language. Possible applications include advanced logic statements, real-time measurement data input from external sources, parametric part routine creation, advanced output, task automation, and many more. SmartScript requires MeasureMind 3D.

LOOK CLOSER
at a relationship with OGP

A metrology system is an important purchase. It is an investment in the quality of your products. Our services supplement your investment in a SmartScope Flash system – from installation and training, to service and repair, to leasing and financing – OGP does more than sell you a system. We want you to have a solid relationship with your SmartScope Flash – and with OGP.

FINANCE

Easy to use, easy to buy/ There are options for your SmartScope Flash system, and there are optional ways to buy it. If you prefer to finance your purchase, low, fixed-rate leasing protects against inflation and improves your ability to budget and forecast. Payments can be scheduled to coincide with your seasonal cash flow. And flexible end-of-lease options make it a breeze to purchase, refinance, or upgrade the system.

INSTALLATION

Starting out right/ Your SmartScope Flash system will be professionally installed. Proper system setup ensures optimal performance, so we make sure it is properly positioned, level, and stable.

TRAINING

Start measuring now/ Your primary system operator will be trained when the system is installed. OGP's extensive documentation and skilled installers will have you measuring critical dimensions from day one. Specialized training is available at your facility or at regularly scheduled classes at our Rochester, NY headquarters, or one of our many global offices, OGP Authorized Technical Centers, or at the facilities of factory-trained representatives. We are prepared to help you learn how to get the most out of your SmartScope Flash investment.

SERVICE

Keeping you in production/ Your SmartScope Flash system is designed for long-term, continuous use, whether you use it 10 minutes a day or 24/7 – Flash reliability will keep you on schedule. In the event service is required, OGP is ready to respond immediately. From knowledgeable technical phone support and troubleshooting, to on-site service, we will get your system back online quickly. Our team of strategically located Quality Vision Services field technicians are ready to provide on-site repair, as well as scheduled maintenance and service.

SERVICE CONTRACTS

Let us handle routine maintenance/ When SmartScope Flash is an integral part of your manufacturing process, OGP service contracts can eliminate your maintenance concerns. Service contracts offer periodic system maintenance and discounted repair services. And if you have several OGP systems, one contract can cover them all.

WARRANTY

Peace of mind/ Your purchase of an OGP SmartScope Flash system gets you more than improved productivity and quality. We stand behind our claims with strong hardware and software warranties, so you can be confident in your purchase decision.

SUPPORT

Local/ OGP's long relationship with its representative sales force means they are experienced with SmartScope Flash systems and technologies. They know how manufacturers use these systems in the real world. You can count on them before and after the sale to make sure you get all that you can from your Flash system.

Online/ Keep in touch with OGP on the Web at www.ogpnet.com to get even more from your investment. Find product literature, information about software revisions, and more at the Member Center. And sign up for our newsletter to receive new product information and helpful hints for peak operation of your Flash system.

Factory/ Our skilled staff of application engineers is ready to talk about your specific applications. And when you call OGP you speak to real people, not automated answering systems.

S M A R T S C O P E
FLASH

All-in-one measurement solution

Optical Gaging Products equips every SmartScope Flash metrology system to handle a wide range of applications. But "all-in-one" doesn't mean every Flash system is the same. Every customer has different requirements. Let us tailor a Flash strategy that satisfies your measurement needs, and enhances your overall productivity. Knowing your options is the first step. Contact OGP to discuss the all-in-one solution that's also just-for-you.