



# EXPLORING COMPARATOR TECHNOLOGIES

## Which System is Right for Your Measurement Needs?

The fundamentals of optical comparators have changed very little since they originated in 1920 – and for good reason. Their large viewing screens and robust platforms provide a reliable and cost-effective solution to many measurement needs in manufacturing and quality control.

What has changed are the many new optical technologies that have improved comparator performance. Innovations such as LED illumination, solid-state edge detection, and digital video cameras have transformed traditional comparators into automated, high-tech measuring systems.

VidiProbe™ and the c-vision™ Video Contour Projector® from OGP® are two unique systems that blend traditional comparator designs with advanced technology.

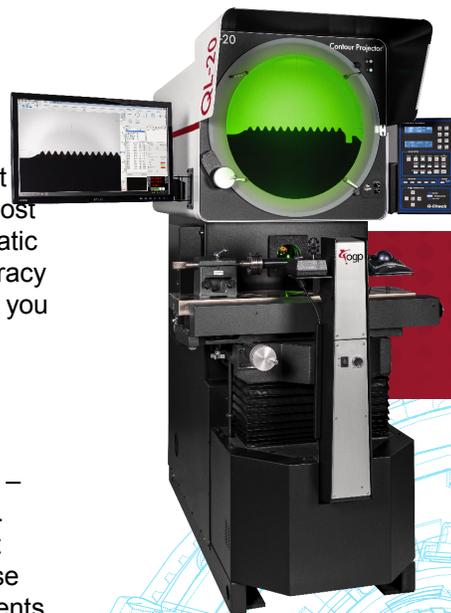
## CHOOSING A SYSTEM

With so many choices of measuring technology available today, it can be difficult to determine which type of system will offer the most benefit to your operation. Both VidiProbe and c-vision are automatic shop floor measuring tools that can improve the speed and accuracy of your measurements. Which one you choose depends on what you need to measure.

### 1 Traditional Comparators

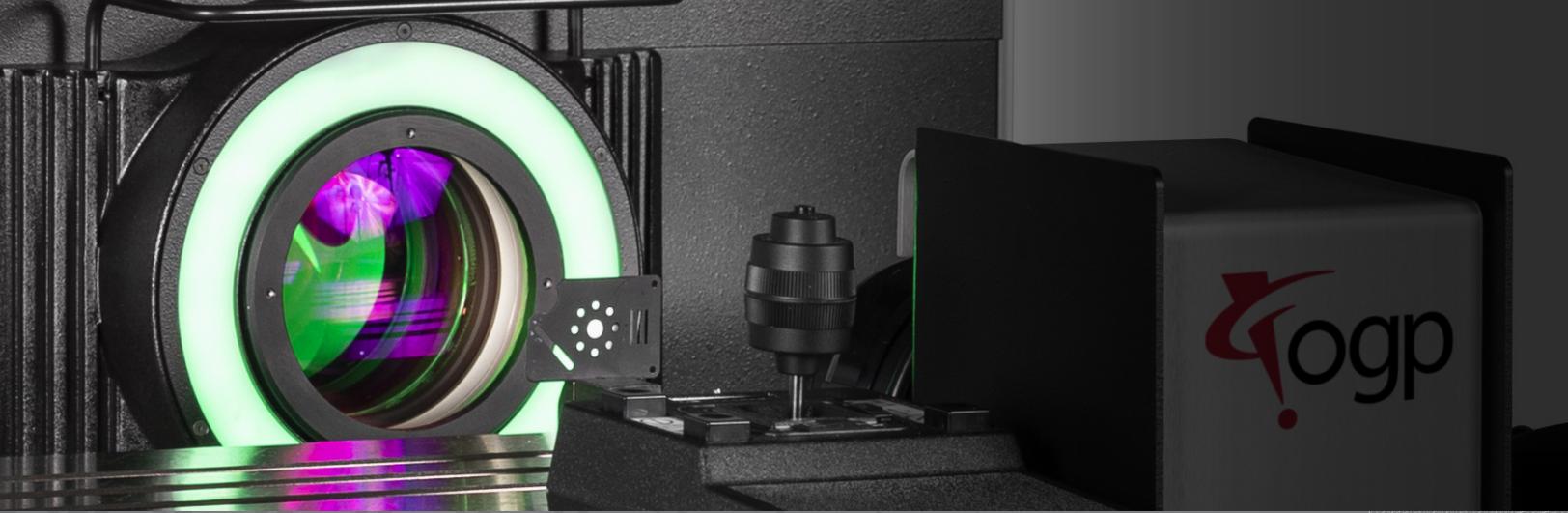
Traditional Comparators work essentially like a large microscope – presenting an accurately magnified image of a part on its screen. Simple comparators are perfect for inspection and measurement using one of the modern Digital Readout (DRO) controllers. These techniques handle a wide variety of size and location measurements on machined parts of all sizes.

**VidiProbe** is an option available exclusively on OGP comparators that adds a digital video camera inside the comparator's optical system, allowing you to “see” a portion of the screen image on the video monitor, and to perform measurements automatically.



OGP QL-20™  
Contour  
Projector®  
with  
Vidiprobe





VidiProbe offers several advantages. First, it's completely automatic and measures accurately with no reliance on operator skill or judgment.

Second, VidiProbe's digital zoom allows measurement of small features that would be too small to measure without changing magnification lenses.

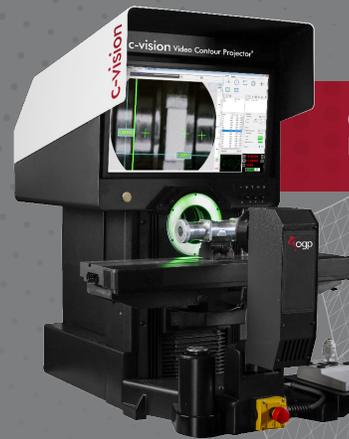
Third, easy to use Measure-X® software is designed for use with comparators and makes it easy to set up measurement routines.

Best of all, an OGP comparator with VidiProbe is a hybrid system which can be used either as a shop-hardened traditional comparator, or as an automatic vision system – essentially giving you two systems in one.

## 2 Video Contour Projectors

**c-vision** Video Contour Projectors belong to the new breed of large field-of-view vision measurement systems. **c-vision** uses the latest telecentric optical system design to image and measure a large area of the part – up to 4 inches – all at once. Megapixel digital cameras with digital zoom enable highly accurate measurement of features without the need for high optical magnification. **c-vision** systems excel at measuring parts weighing up to 350 pounds with complete automation and a convenient touchscreen control panel. Highly functional Measure-X software, combined with the proven design of a profile projector for shop-floor toughness, offers a unique combination for CNC measurement in the machine shop.

The advantage of **c-vision** over traditional video measurement comparators is its large field of view and long depth of focus, which allow it to measure large features in a single snapshot without refocusing on features that are at different heights.



OGP **c-vision**  
Benchtop



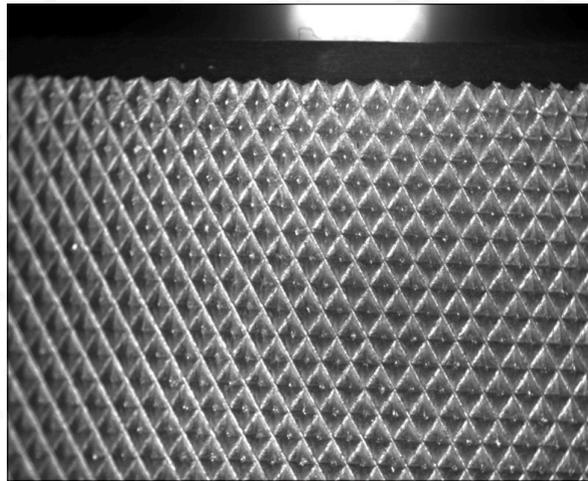
OGP **c-vision**  
Floor Model

**With its optional large field metrology camera, c-vision floor model systems can provide a 25% larger field of view than a traditional 30-inch comparator while maintaining a footprint smaller than a typical 20-inch comparator.**

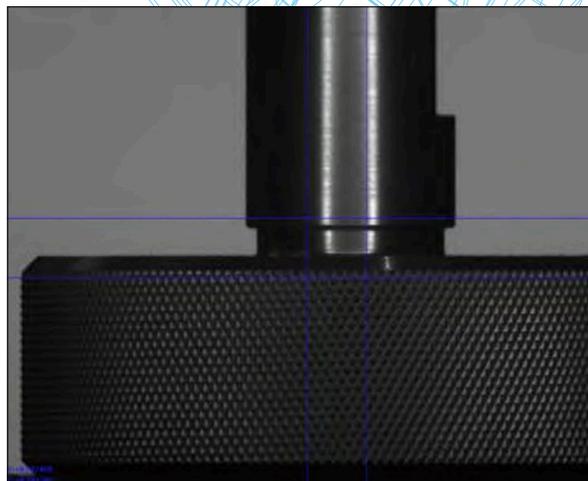
## Comparing VidiProbe and c-vision



Part shown approximately to scale.



VidiProbe system at low magnification.



c-vision system at low magnification.

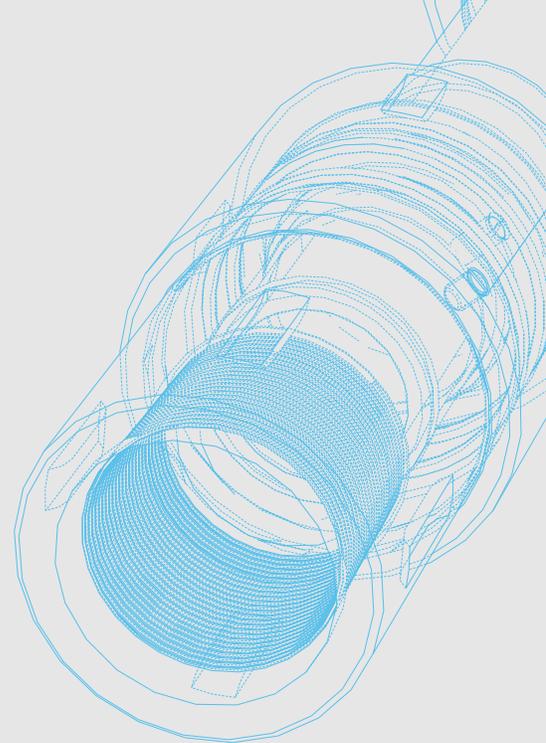
## Both VidiProbe and c-vision also offer:



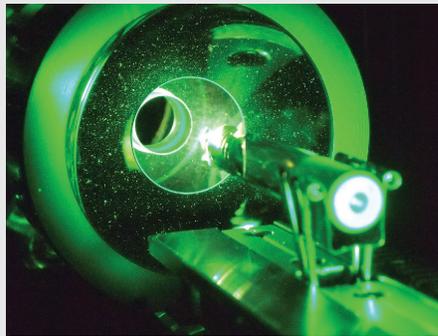
**Helix Stage Motion** allows the worktable to pivot for gear and thread measurements.



**Programmable Motorized Rotary Indexer** for staging shafts and cylinders.



**Swing Away Lamphouse** allows oversized parts to be staged.



**Surface Concentrator** intensifies surface light for a brighter image.

**Measure-X Software** – provides tools such as FeatureFinder and CAD overlay to make measurements faster, easier, and more accurate.

The screenshot displays the Measure-X software interface. On the left, there is a 'Weak Edge Settings' panel with sliders for Points, Rough, Weak, and Focus First. Below this is a 'Print Data' table:

Feature	Unit	Nominal	Actual	Tolerances	Deviation	Exceeded
Step 3						
Diameter	in	+0.100000	+0.100964	+0.100000 -0.100000	+0.000964	+
Step 4						
Diameter	in	+0.100000	+0.101068	+0.100000 -0.100000	+0.001068	+

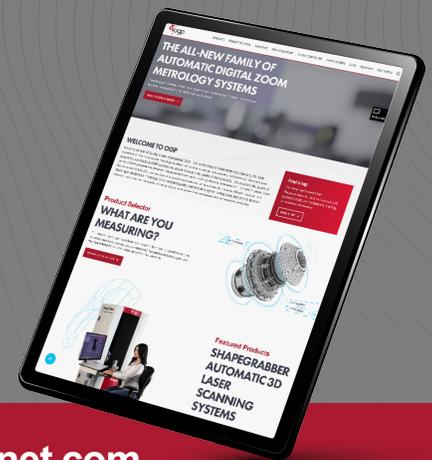
At the bottom center, there are two large red text boxes showing measurement results: **+0.903374** and **+0.792635**. On the right, the 'Enhanced Editor' shows a CAD model with various measurement features (D, R) and a 'CAD Navigator' table:

From	To	X	Y	Z	Angle
1 Point		+0.029714	-0.019423	+0.001779	
2 Origin		+0.000000	+0.000000		
3 Circle		-0.000058	-0.000063	+0.000007	+0.100964
4 Circle		+1.999731	+0.000022	-0.000007	+0.101055
5 Origin		+0.000000	+0.000000		
6 Align X axis					4
7 Line		+2.123115	+0.085575	-0.001779	+59.8370
8 Line		+2.124053	+0.288597	-0.001779	+59.7491
9 Line		+2.125200	+0.491655	-0.001779	+59.7490
10 Line		+2.126200	+0.694696	-0.001779	+59.8059
11 Line		+2.124442	+0.390135	-0.001777	+59.7093 7-10
12 Line		+2.081013	+0.852374	-0.001779	+134.7768
13 Circle		+1.872017	+1.118396	-0.001779	+0.242959
14 Line		+1.597243	+1.320701	-0.001779	+134.7715
15 Line		+1.380510	+1.375327	-0.001779	+179.7517
16 Line		+1.073862	+1.376961	-0.001779	+179.8043
17 Line		+0.767174	+1.378627	-0.001779	+179.7925
18 Line		+0.460528	+1.380321	-0.001779	+179.7778
19 Line		+0.153909	+1.381945	-0.001779	+179.7614



# SUMMARY

Optical comparators equipped with VidiProbe and c-vision Video Contour Projectors from OGP offer two unique options with advanced technologies for traditional comparator users. The conveniences of automatic measurement, digital zoom, and CAD overlay software combine with additional performance features to improve the speed and accuracy of measurements.



Learn more about OGP Comparator Technologies at [ogpnet.com](http://ogpnet.com)

OGP (Optical Gaging Products) is a division of Quality Vision International Inc (QVI®), a world leading manufacturer of precision multisensor metrology systems for industrial Quality Control. Our metrology systems focus on measurement technologies that help manufacturers monitor dimensional compliance to design specifications. First introduced in 1992, the famous OGP SmartScope® product family has become one of the world's most popular and versatile dimensional measurement systems. SmartScope systems are designed and produced at QVI corporate headquarters in Rochester, NY, USA.



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