

# VIEW Micro-Metrology

Precision Measurement Solutions for Process Control

# Measurement Solutions Designed for Your Needs

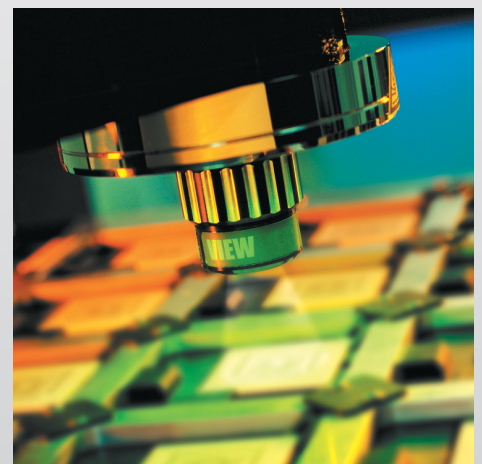
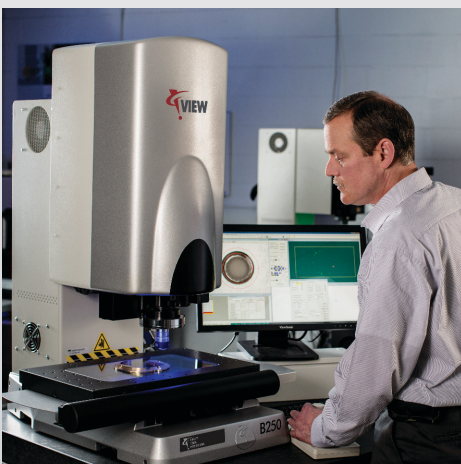
You'll find distinct advantages when you choose VIEW™ Micro-Metrology as your process metrology partner. VIEW pioneered high-speed dimensional measurement with the world's first vision CMM system in 1976, and our focus on high-productivity measurement continues today.

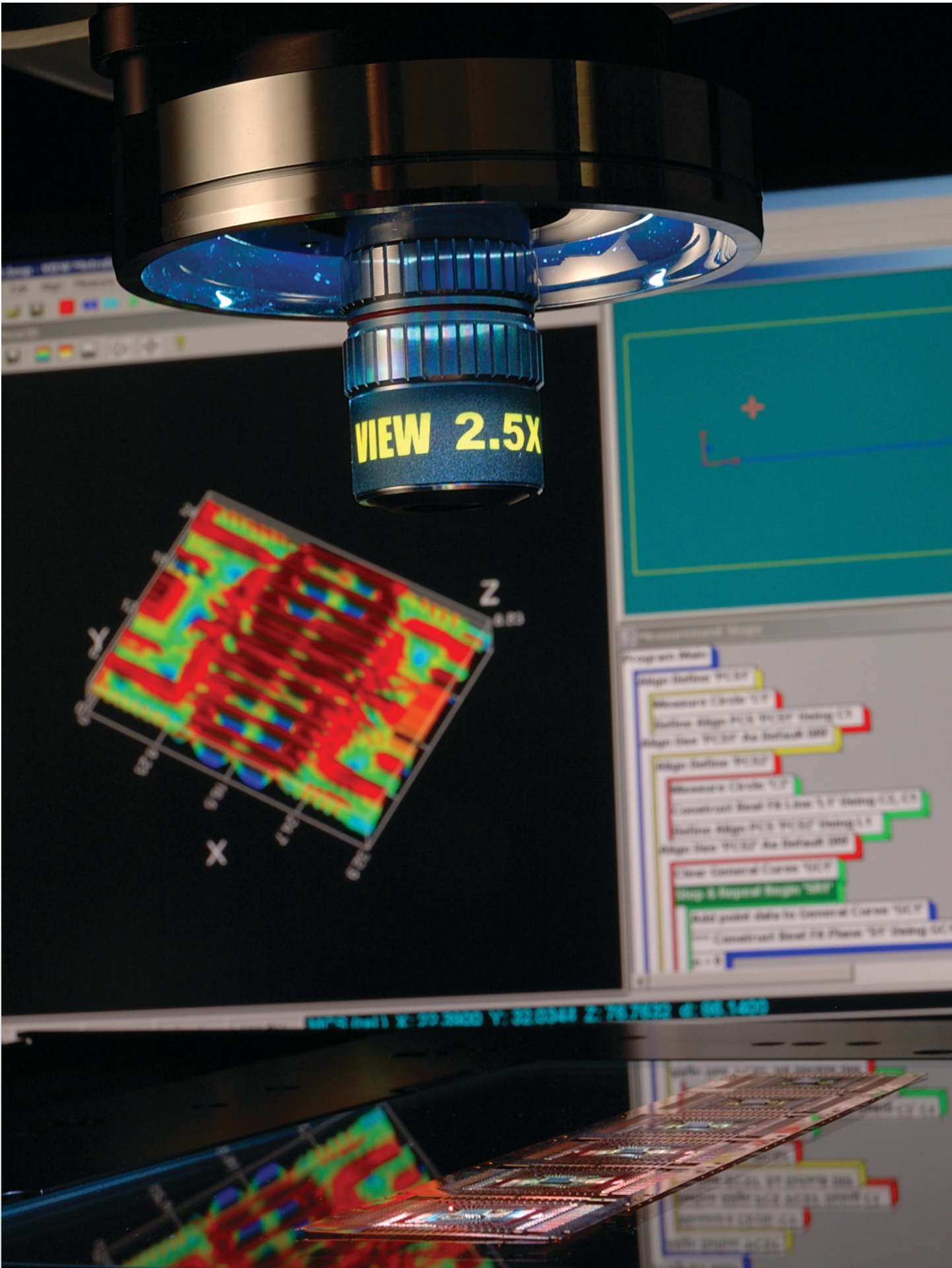
## Productivity = Accuracy at Speed

Many measurement techniques offer high accuracy, but few combine precision and high throughput in a production-worthy tool. VIEW's high-productivity platforms combine high-speed sensors and transport technologies with advanced optics and metrology software for unparalleled process capability. No other metrology company offers the productivity and flexibility that VIEW delivers.

VIEW offers a wealth of experience when it comes to integrating metrology systems into precision manufacturing. VIEW's leadership role in developing application-specific metrology solutions over many years has helped to advance critical manufacturing processes in disk drive, consumer electronics, medical devices, aerospace and other industries that demand precision. VIEW can do the same for you.

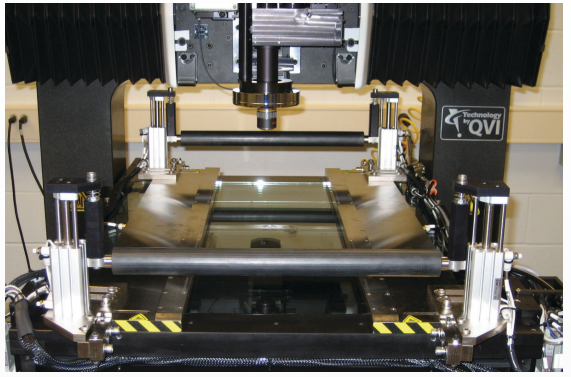
With dedicated employees worldwide, and a global network of metrology partners, VIEW delivers precision and productivity across the globe.



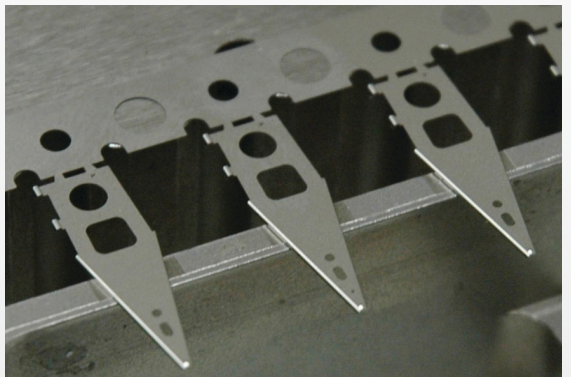


# Experience with Your Process

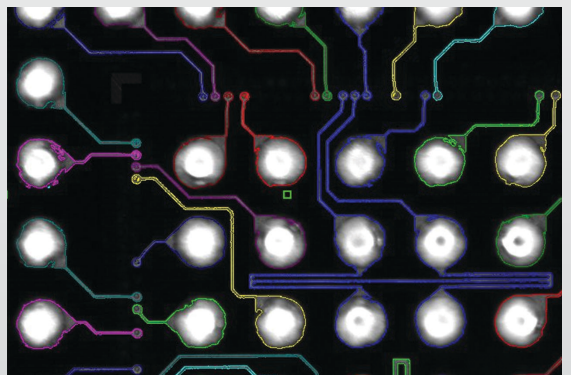
VIEW systems are used to monitor and control industrial processes where high accuracy for critical dimensions and component positioning are required. VIEW offers a unique blend of optical configurations, software, fixture tooling and application programming to create turnkey solutions for the most demanding manufacturing challenges.



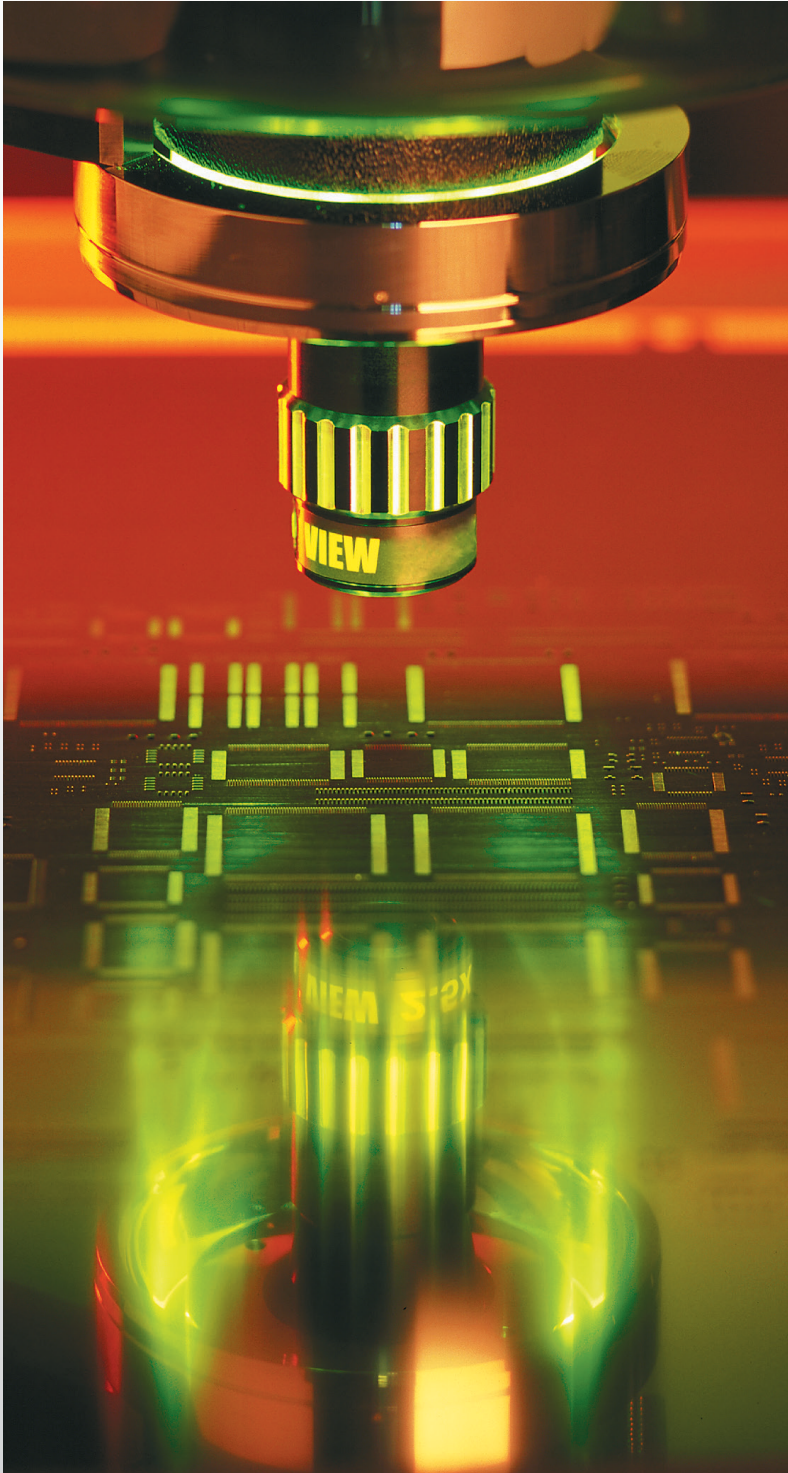
VIEW specializes in matching high productivity measurement platforms with application-specific sensors, tooling and software – from simple part holding fixtures, to automatic material conveyors, to factory floor operator interfaces.



VIEW technology offers the capability and precision to measure critical micro-machined components used in consumer electronics and computers. VIEW systems are used for process control on more than 80% of the HDD suspensions manufactured worldwide.



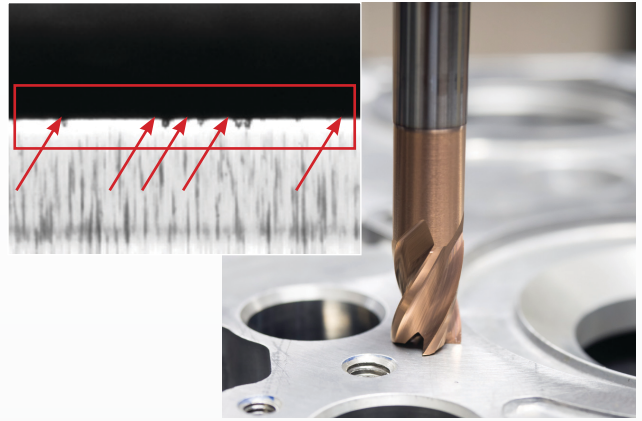
VIEW systems do more than simply measure dimensions. VIEW image processing technology identifies and characterizes defects – from scratches and digs in optics, to shorts or opens in micro-flex circuits.



## Precision Micro-Grinding

VIEW systems provide dimensional characterization of defects in precision cutting tools. High resolution optics and flexible software allow summing of total incursion area per unit length, or conventional tolerancing of individual defect sizes, enabling quality control for individual parts and feedback to the CNC program to account for tool wear and machine drift.

**Application:** Blade Edge Damage – Measurement of length and depth of edge defects on cutting surfaces.

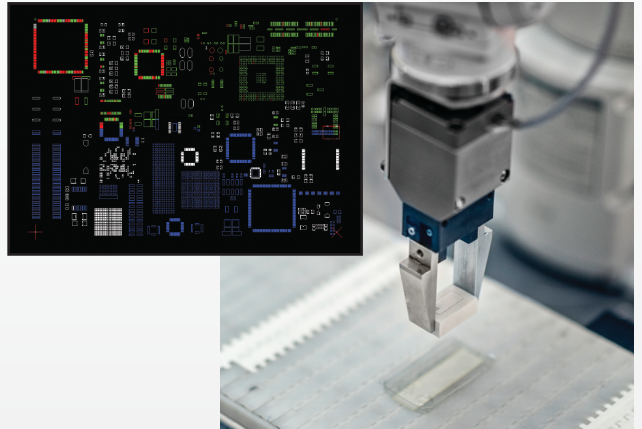


## Electronic Assembly Calibration and Monitoring

Elements® software provides the optimum capability for measuring complex electronic assemblies. Direct CAD-to-measure programming and rules based programming allow routines to be set up in minutes. Elements quickly measures and compares feature data to the CAD file for rapid process control feedback right on the manufacturing floor.

**Application:** Stencil Validation – rapid measurement of position, size and rotation of thousands of apertures.

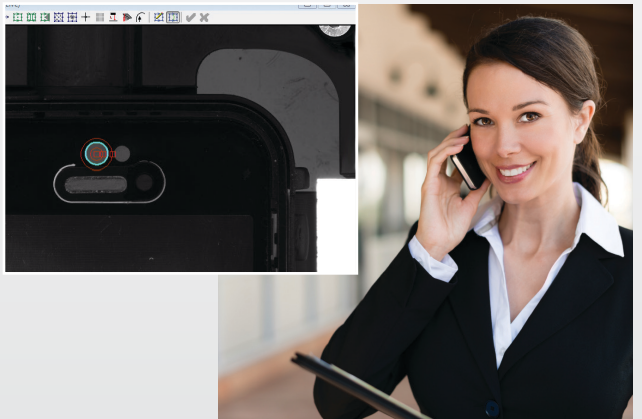
**Application:** Robotic Placement System Calibration – measure location of components placed on a sample coupon to determine positioning offsets for each placement head.



## Mobile Phone, Tablet and Wearable Assembly

Automated assembly of handheld devices places a premium on control of critical dimensions that determine the reliable function and sleek feeling consumers expect. The combination of materials such as glass, plastic and lightweight alloys in a factory floor environment presents unique challenges for the measurement tools. VIEW Benchmark™ systems offer the rugged stability and precision needed to successfully measure tight assembly tolerances.

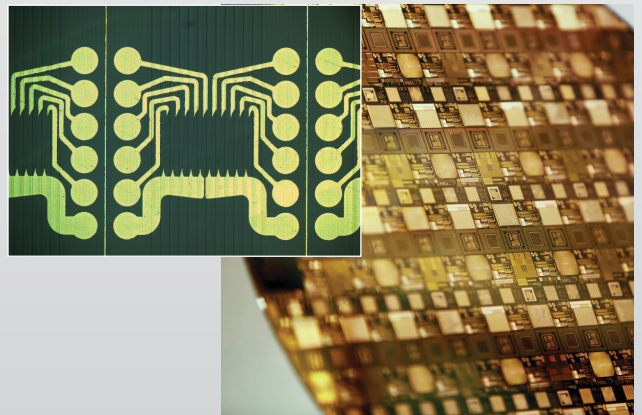
**Application:** Mobile Handset Assembly – shop-floor measurement of feature sizes and locations on smartphone cases.



## Photolithography & MEMs Fabrication

Few manufacturing processes place greater emphasis on precision process control than integrated circuit fabrication. VIEW systems offer high performance tools for wafer and photo level CD measurements for wafer based displays, MEMs and III-V devices. VIEW systems provide extended measurement range and speed for larger display devices with large numbers of features.

**Application:** Touchscreen Display – measurement of size and location of over 100,000 features on a 200 mm wafer. Location patterns change frequently, requiring 100% CAD-based programming and intelligent finder optimization.



# Unmatched Capabilities

## Image Acquisition

VIEW systems acquire full frame, megapixel, digital images in real time. Exclusive VIEW technologies such as AMF™ Area Multi-Focus and CiC™ Continuous Image Capture acquire image data at extremely high speeds to support online or near line production.

AMF creates a high-resolution 3D data set from a normal autofocus pass, offering a high-throughput alternative to single point laser surface scanning. An Extended Depth of Field Image (EDFI) can also be simultaneously created to provide an image that is completely in focus through the field of view.

CiC synchronizes illumination with camera frame acquisition and stage movement to acquire video images non-stop. For components with densely packed features, throughput improvements of 50% to 200% are typical, compared to standard move and measure techniques.

## Image Filtering

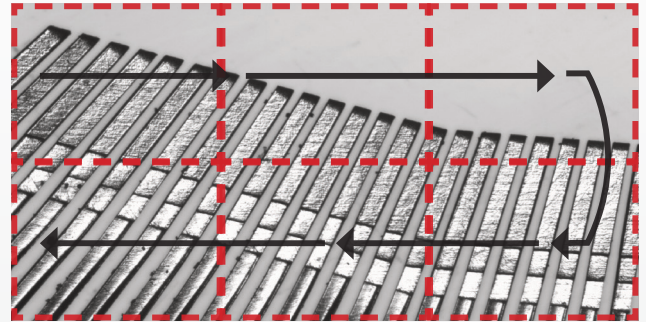
VIEW measurement software offers a variety of image-filtering operations to process each video image so that features of interest are easily found, while extraneous features are ignored. Image filters include erosion, dilation, smoothing and contrast. Edge tools employ smoothing and outlier removal for reliable and accurate edge processing. Color and hue filters are available on systems equipped with color cameras.

## Image Analysis

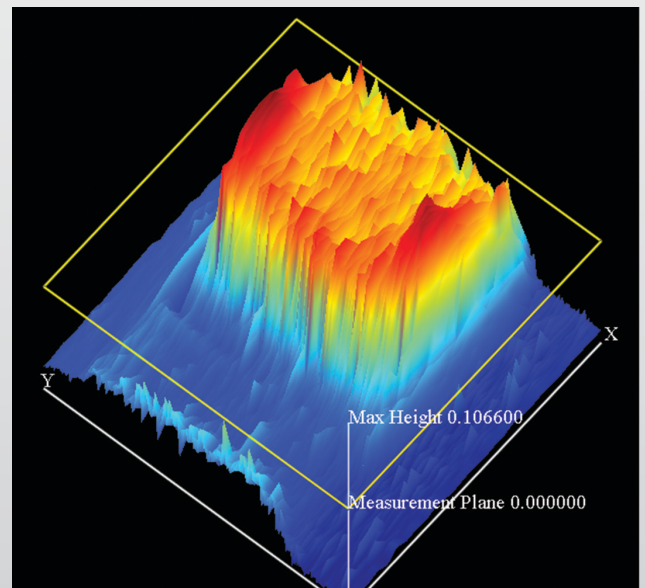
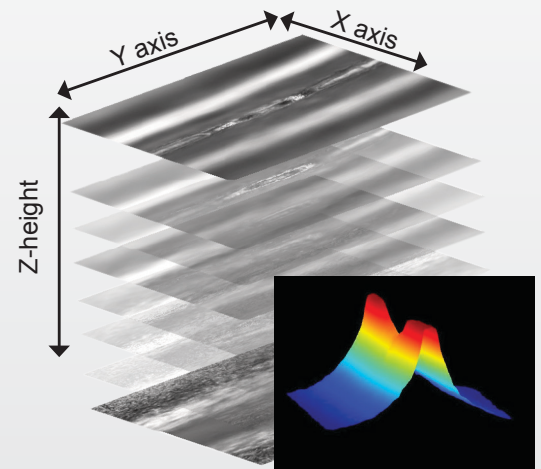
VIEW provides a library of tools for convenient image display and analysis. Native Video® processing capability allows saved images to be measured using the same analysis tools as live images. Re-measure archived part images, or import and measure images from SEMs or other imaging tools.

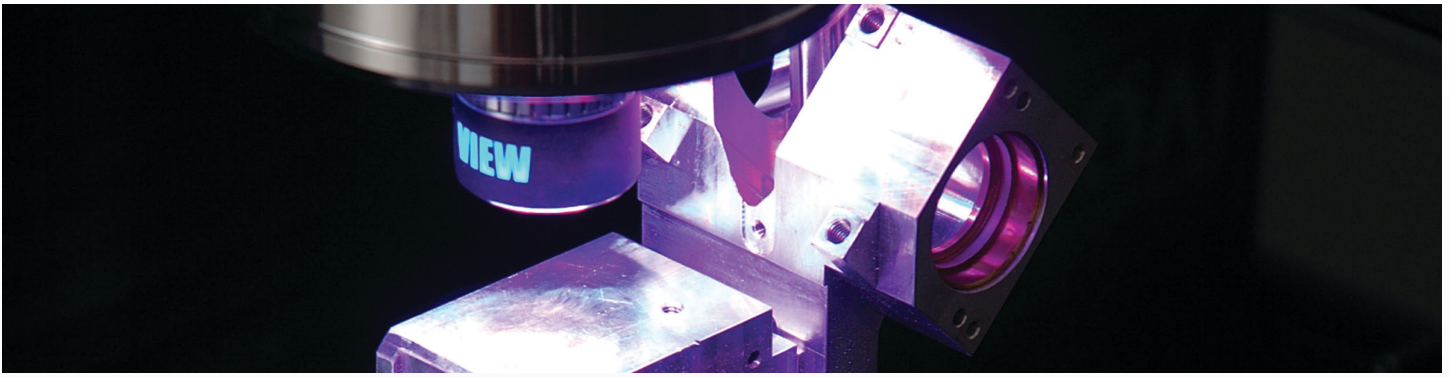
VIEW's pioneering work in digital image processing has led to development of a suite of edge detection and area processing functions that are perfectly suited for automated metrology, feature analysis and flaw detection.

Stage motion path for continuous image capture.



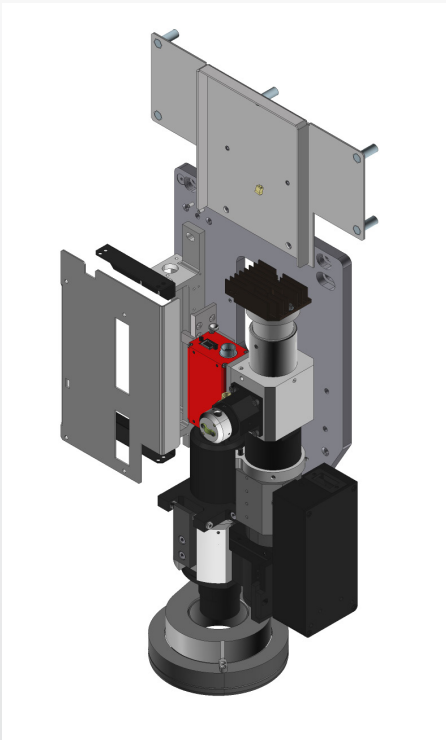
AMF advanced video analysis





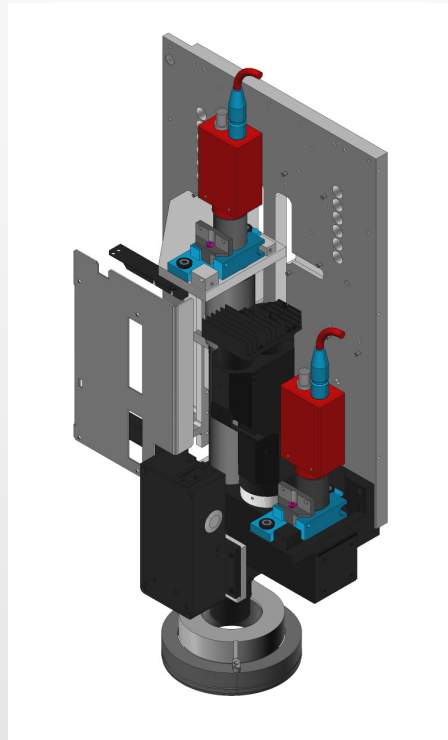
## Optics

VIEW high-performance optics match optical characteristics with feature sizes and throughput requirements. Four unique illumination sources, each designed specifically for the optical system, provide flexibility to measure a wide range of feature types and material characteristics.



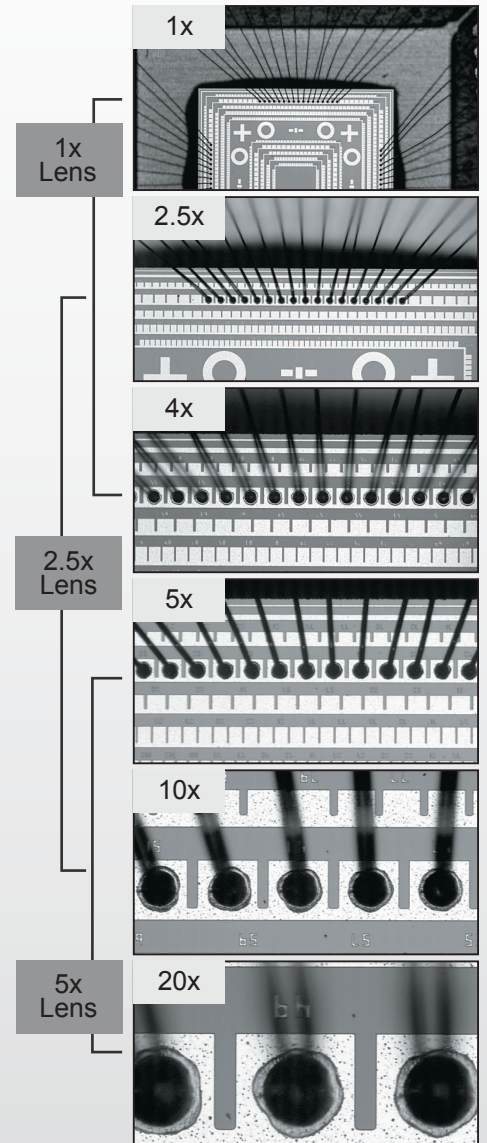
### Single Magnification Optics

The single magnification optics system offers an optical resolution that supports up to a 5.0 megapixel digital camera with the standard objective lenses. This system is ideal for high-speed measurement of parts with many similar features, for which a single magnification is sufficient.



### Dual Magnification Optics

The dual magnification optical system consists of two distinct optical paths, each with its own camera. Magnification change is instantaneous, with no moving parts, no latency and no need to recalibrate. Dual magnification systems offer the convenience of a large field of view for locating features, and a high magnification for autofocus and small feature measurement.

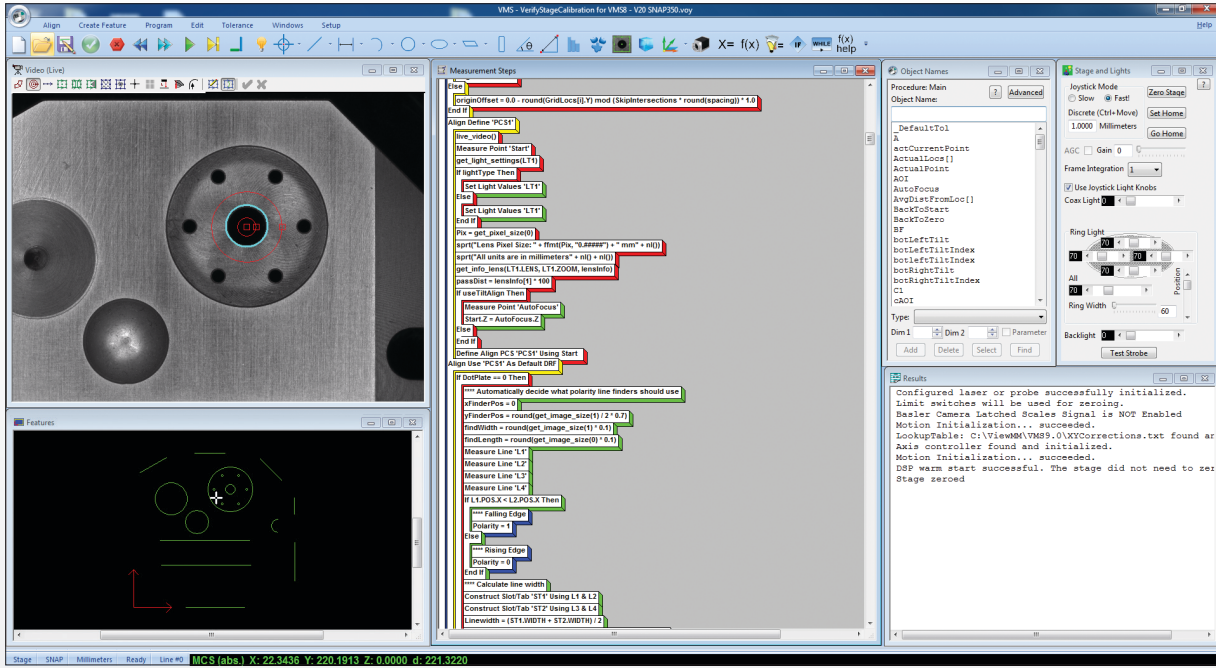


### Match Magnification to Feature Size

Interchangeable objective lenses allow optical resolution and field of view size to be optimized for the application. For dual magnification systems, the internal magnifications are 1X and 4X multiples of the objective lens magnification.

# Innovative Software Capabilities

**VIEW** offers a choice of metrology software products to suit a wide range of measurement and process control situations. Both software packages offer the same high-speed image acquisition and measurement capabilities.



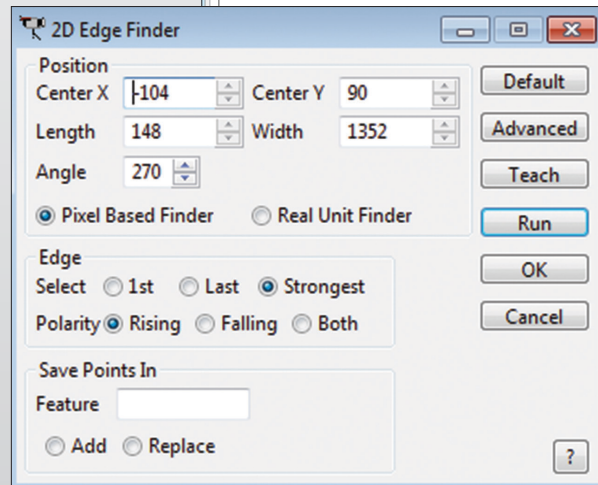
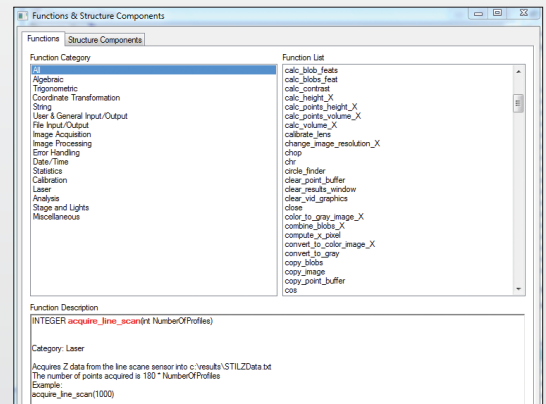
## The VMS™ Experience

VMS software is a video metrology development environment designed for standalone applications and integration into automated production settings. VMS allows windows and toolbars to be sized and arranged to suit the user's preferences, enabling the user to tailor the user interface to create turnkey custom applications without modifying the base software. VMS software is the choice for demanding metrology requirements for automated production settings.

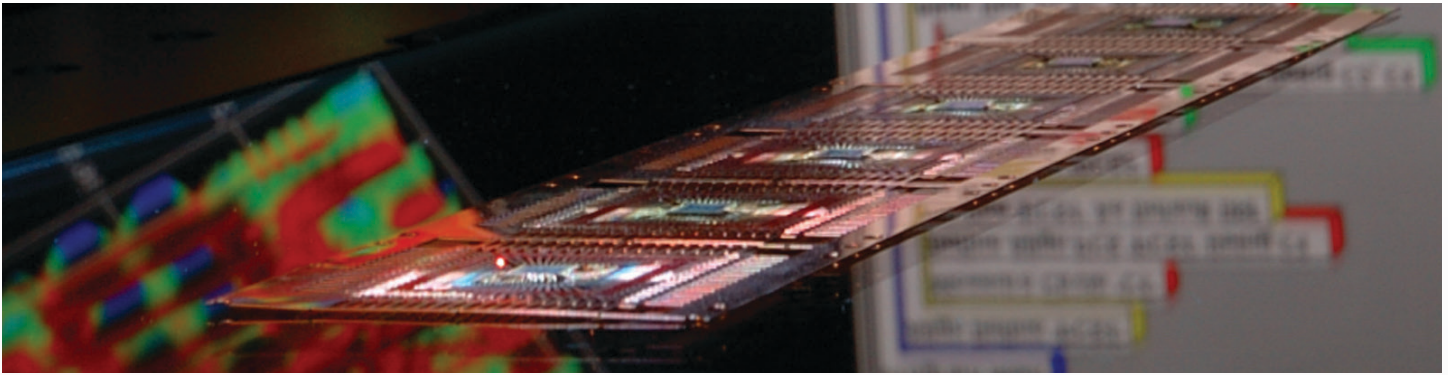
## VMS Functions

VMS is designed to be easy to use without sacrificing capability. VMS provides full access to data structures and utilizes variables, expressions, loops, logic, file I/O, advanced image processing and custom alignments to serve the world's most demanding metrology applications.

In addition to its advanced programmable measurement capabilities, VMS offers robust exception handling, advanced feature constructions, customized output and control of process automation tooling via digital I/O.







## Advanced Functions Made Easy

Built-in wizards take the guesswork out of setting up high level sub-routines. For example, the Call Procedure wizard combines the Help text and drop down menus for each of the function's arguments. The Image Acquisition dialog allows the user to quickly acquire images, AMF data sets and create stitched or Extended Depth of Field (EDFI) images. The Edge Diagnostics window shows detailed information about edge finding, thresholds and profiles that are useful for optimizing edge performance in all situations.

## Advanced Edge Processing Tools

Multi-function tools such as Blob and Centroid enable flaw detection and feature presence or absence checking, in addition to dimensional measurements and feature centering.

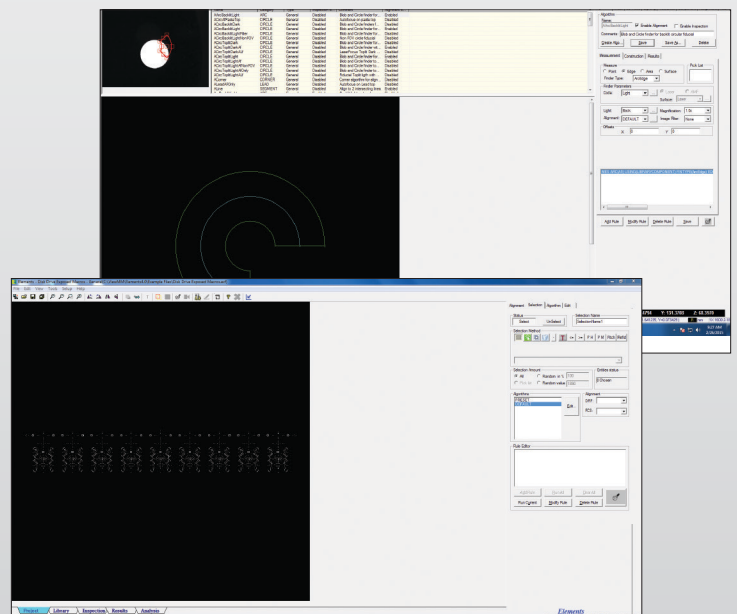
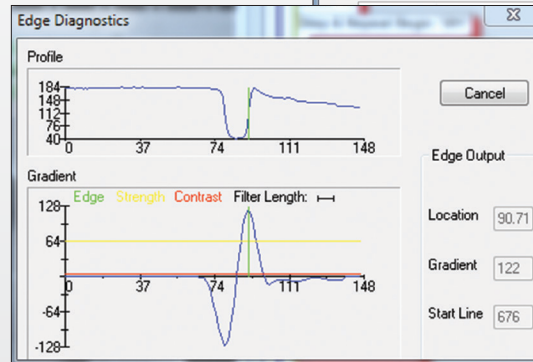
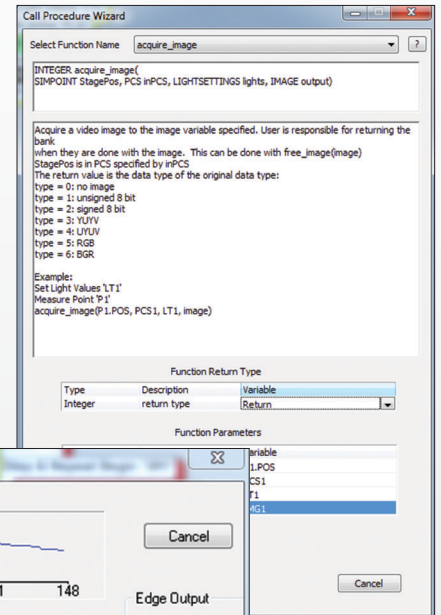
## Elements®

VIEW Elements software is designed for precision measurements of electronic assemblies in a high mix manufacturing environment. No time consuming programming needed – simply import the CAD file and select the features to measure and inspect. Elements allows part changeovers to be set up in minutes, not hours.

Elements optimizes the entire inspection sequence and routing for the selected features, enabling thousands of features to be measured in minutes.

## CAD Import and Editing

Elements can import and use a variety of 2D CAD file formats such as DXF or Gerber, or CSV list files as the basis for the measurement routine. Elements' powerful editing capabilities allow for the editing or removal of extraneous features in the CAD file. This tight integration of CAD into the measurement routine saves time and reduces errors in production settings.



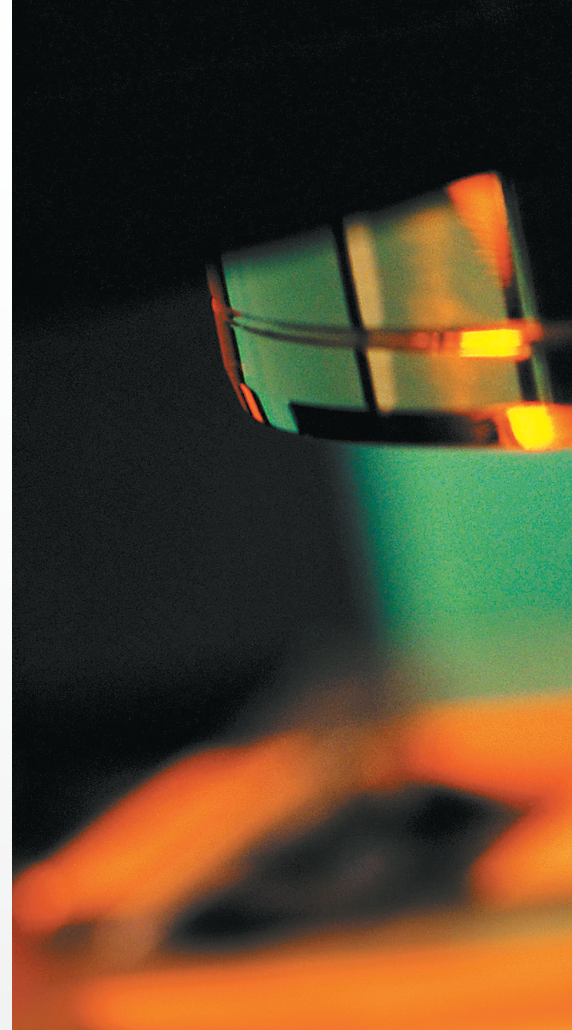
# High Performance Measuring Systems

VIEW's high-performance measurement systems combine the key technologies needed for consistent accuracy and productivity in advanced manufacturing operations. All VIEW systems offer high speed and high reliability for 24/7 operation on the shop floor or in the metrology lab.

VIEW Pinnacle is an ultra high-performance measurement system that is designed for applications requiring the highest levels of accuracy, throughput, functionality, and reliability. Pinnacle™ Plus features an oversized granite optical support structure, high-resolution fixed-mag optical system, and a high-performance Z-axis motion assembly to provide the lowest possible measurement uncertainty.

VIEW Summit is designed for components requiring a large work envelope, tight tolerances and high accuracy. Based on the same core technologies used in the Pinnacle, the Summit features a fixed bridge design.

The latest VIEW MicroLine® high performance semi-automatic measuring microscopes combine manual XY stages with fully automated high-precision focus and image measurement. This critical dimensional measurement system is ideal for wafers, masks, MEMS, and other micro-fabricated devices. This system provides peak performance and repeatability at the highest optical magnifications available.



## View Performance Measuring Systems



### Pinnacle 250

- Floor Model, Compound Linear XY Motors
- 250x150x100 mm
- Options: Dual Mag, Enhanced Accuracy, TTL Laser, Rainbow Probe™



### MicroLine AF 1000 | 2000 | 3000

- Benchtop, Compound Manual XY, Motorized Z
- 1000 Model: 100x100x175 mm
- 2000 Model: 200x200x175 mm
- 3000 Model: 300x300x145 mm
- Options: Motorized XY, Analyzer, Polarizer, DIC, Optical Filters



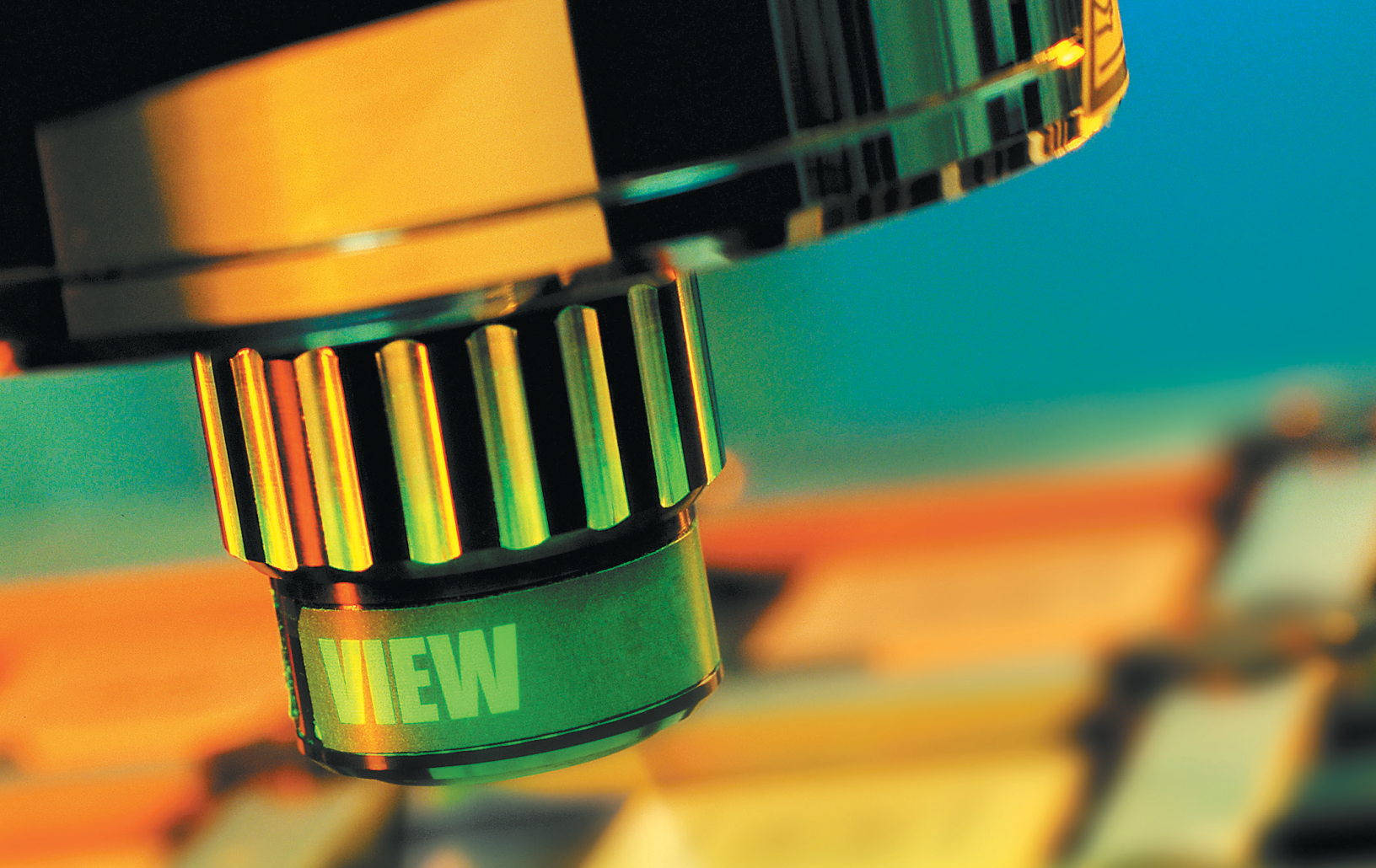
### Pinnacle 250 Plus

- Floor Model, Compound Linear XY Motors
- 250x150x50 mm
- Options: TTL Laser, Rainbow Probe



### Summit 600 | 625 | 800

- Floor Model, Fixed Bridge
- 600 Model: 450x600x150 mm,
- 625 Model: 615x610x150 mm,
- 800 Model: 800x820x150 mm, Ext Z 300 mm (opt)
- Options: Dual Mag, Linear XY Motors, Enhanced Accuracy, TTL Laser, Rainbow Probe



The Benchmark is engineered for high accuracy measurements on the production floor. VIEW Benchmark 250 is designed for production lines and work cells where precision measurements are needed for immediate feedback in the manufacturing process. Its compact size makes VIEW Benchmark 250 a versatile measurement system. Benchmark floor models deliver VIEW performance with generous measuring envelopes and handle large form-factor parts with high precision in a rugged shop-floor configuration.



**Benchmark 250**

- Benchtop, Compound Stage
- 300x150x200
- Options: Dual Mag Optics, Enhanced Accuracy, TTL Laser, Rainbow Probe



**Benchmark 450**

- Floor Model, Fixed Bridge
- 450x450x200, Ext Y 600mm (opt)
- Options: Dual Mag Optics, TTL Laser, Rainbow Probe



**Benchmark 300**

- Floor Model, Compound Stage
- 300x300x200
- Options: Dual Mag Optics, Enhanced Accuracy, TTL Laser, Rainbow Probe

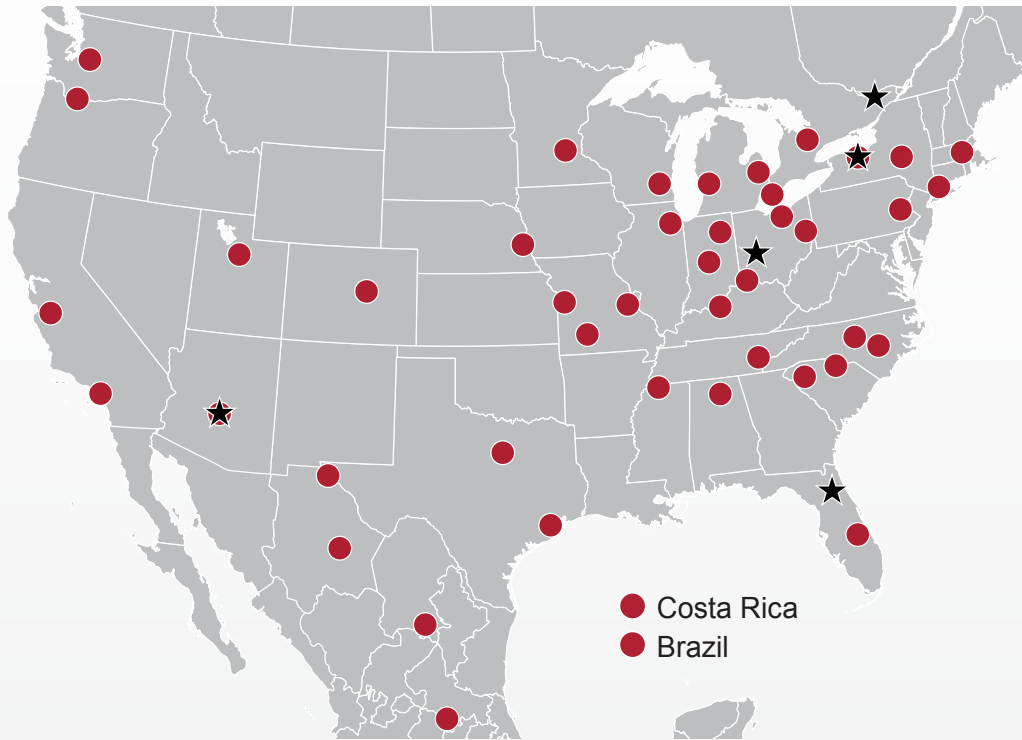


**Benchmark 1500 | 1550 | 1552**

- Floor Model, Moving Bridge
- 1500 Model: 900x1500x200 mm
- 1550 Model: 1240x1500x200 mm, Ext Y 1800/2000 mm (opt)
- 1552 Model: 1500x1500x200 mm, Ext Y 1800/2000 mm (opt),
- Options: Dual Mag, TTL Laser, Rainbow Probe

# Global Sales & Support Offices

## The Americas



### Support Office Locations:

#### Americas

- Rochester, NY, USA
- Dayton, OH, USA
- Gainesville, FL, USA
- Tempe, AZ, USA
- Ottawa, Canada

#### Europe

- Budapest, Hungary
- Hofheim-Wallau, Germany
- Turin, Italy

#### Asia

- Beijing, Shanghai, Suzhou, Xi'an, China
- Bengaluru & Pune, India
- Singapore
- Tokyo, Japan

★ Support Offices

● Sales Representatives

● Agents

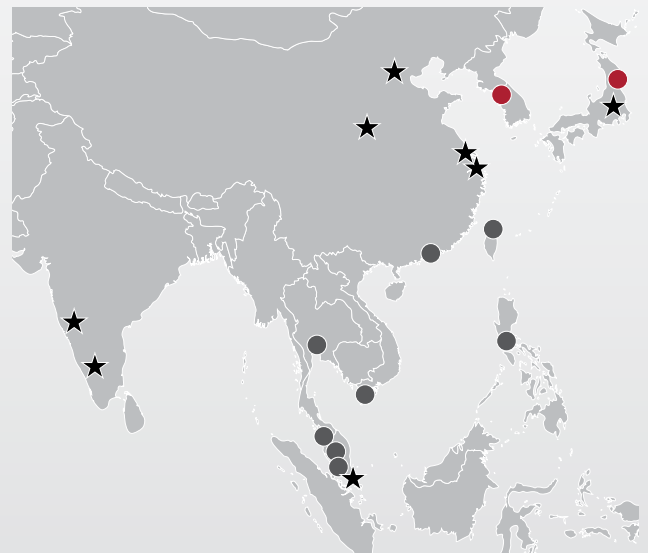
## Europe, Middle East and Africa



● Israel

● South Africa

## Asia



● Australia

● Indonesia



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