

# 2007 Quality Sourcebook

## Dimensional Measurement

**M**anufacturers of all kinds depend on the accurate measurement of products and parts to ensure conformance to customer needs. Whether for size, shape, weight, length or depth, proper dimensional measurement can mean the difference between a happy customer and a lost contract.

The three guides in this section will help you find equipment that ensures proper dimensional measurement. The CMM Directory provides a listing of major companies offering high-tech coordinate measuring machines. Companies listed in the Optical Dimensional Measurement Systems Directory and/or the Vision Systems Directory amplify the power of sight for product inspection and approval.

These directories are not meant to endorse or exclude a particular organization. Rather, they should be used as the starting point in the data-gathering process. Readers are encouraged to contact the companies directly for more information and to ask for—and check—references. Further information, including company descriptions (if provided to us) can be found on our Web site at [www.qualitydigest.com/directories](http://www.qualitydigest.com/directories).

### Dimensional Measurement Section

CMM Directory .....Page 60

*The CMM Manufacturers Directory includes company name, address, phone and fax numbers, and a Web address.*

Optical Dimensional Measurement Systems Directory Page 62

*This directory includes the name, address, phone and fax numbers, and Web address of optical product and service providers.*

Vision Systems Directory .....Page 64

*This directory of vision system inspection providers contains each company's name, address, phone and fax numbers, and Web address.*

### Glossary

- A2LA**—American Association for Laboratory Accreditation
- ACIL**—American Council of Independent Laboratories
- Accuracy**—deviation from a known standard
- Actual value**—measured value of a feature
- ANSI**—American National Standards Institute
- ASME**—American Society of Mechanical Engineers
- Brightfield**—illumination technique that provides flat, even lighting of the field of view
- CAD**—computer-aided design
- CAE**—computer-aided engineering
- CAM**—computer-aided manufacturing
- CMM**—coordinate measuring machine
- Confocal microscope**—visual inspection device that uses white light or lasers to construct a highly detailed map of a 3-D sample
- Darkfield**—illumination technique that lights the specimen surface from an oblique angle to highlight surface features
- Deviation**—difference between the actual measured dimension and the nominal dimension
- IEEE**—Institute of Electrical and Electronics Engineers
- Linear accuracy**—accuracy of the instrument when measuring along a single axis
- NIST**—National Institute of Standards and Technology
- Nominal**—standard, desired dimension or size of a feature
- Optical comparator**—projects a magnified image of a part feature onto a screen
- Range**—X, Y or Z distance a CMM can travel while measuring a part
- Repeatability**—measure of the ability of an instrument to produce the same measured value when sequentially sensing the same quantity under similar measurement conditions
- Resolution**—smallest distance that can be measured by the instrument
- SCC**—Standards Council of Canada
- SRM**—standard reference material
- T comp.**—temperature compensation
- Throughput**—points per minute an instrument can measure
- True position**—exact location of a point, line or plane
- VDI, B89 or ISO**—accuracy standards
- Volumetric accuracy**—accuracy of the instrument when measuring along all axes simultaneously

The information contained in *Quality Digest* directories, plus some additional information, is available online at [www.qualitydigest.com/directories](http://www.qualitydigest.com/directories).

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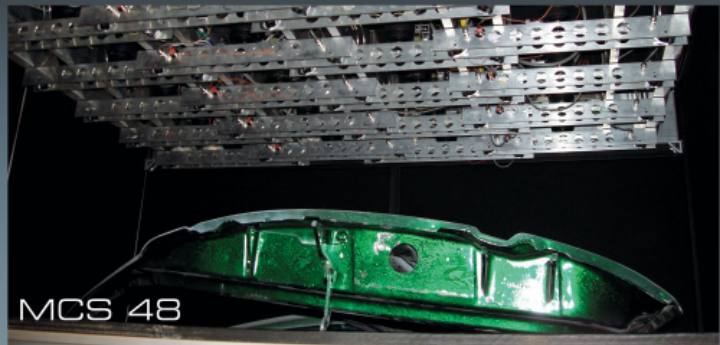
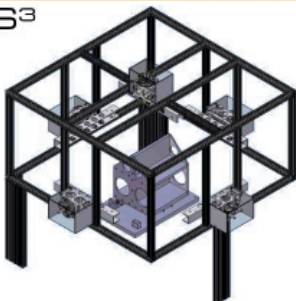
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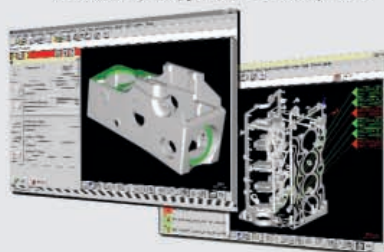
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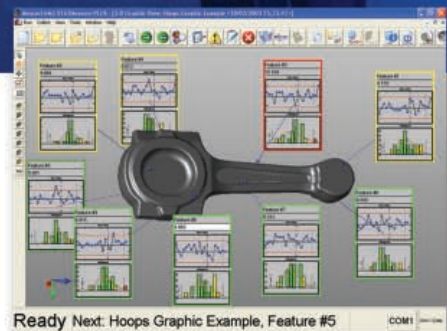
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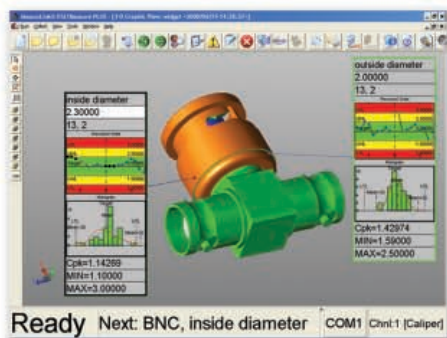
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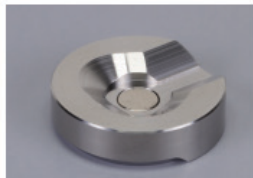
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