

(Vision)

Optical Metrology Spotlight

Cost may have little bearing on results and accuracy levels of even the most extravagant metrology system, and your selection should ultimately depend on what you are trying to measure. A good optical measuring microscope investment will allow accurate measurement of features at the small, sub ten micron level.

Inspection not possible with CMM

As components continue to shrink, coordinate measuring machines (CMMs) become increasingly inefficient. Cumbersome probes struggle to measure features quickly and do not accommodate inspection of surface features. They also fail to provide non-contact measurement, essential for medical devices and other critical components.

Allowing for inspection capabilities not possible with CMMs, optical measuring microscopes utilize pure optical images coupled with the most accurate image recognition system known to man – the human brain – to deliver a precise measurement for complex features.

Is video measuring an alternative?

Another alternative is the video measuring system; however, this option does not provide the reliability level of optical systems. Although new higher density chips are now available for video solutions, results will never match those of an optical system, as chips will always be limited both by size and the wavelength of light required to produce an image.

White balance presents another problem, particularly when measuring a catalogue of component parts. Highly reflective alloys require a finely tuned white balance, which could mean time-consuming adjustments of controls to ensure a highly defined edge for measuring. An optical image does not require the user to adjust or calibrate a screen for accurate color rendition as with a video system.

In summary

With a lower price tag and smaller footprint than a CMM, an optical system offers a good starting point for those seeking the accuracy of sub ten microns and for measuring features not visible to the naked eye. For surface features in danger of deformation, an optical system should always be considered. Likewise, an optical system may be the single option for complex components with little contrast, no clearly defined edges or when color rendition is crucial. As a rule of thumb, if you can see it, you can obtain a more accurate measurement.

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