

## *Electronic Video Microscope*

### Case Study Application #105

#### **Large Automotive Original Equipment Manufacturer**

The speckFINDER has found a home at a large original equipment manufacturer for the automotive industry. This company produces electronics for radios, instrument clusters, and electric controllers for engines, power trains, and auto bodies. This comprehensive manufacturing facility performs incoming component evaluation, product design, production test engineering, reliability testing, and warranty analysis.

Fourteen speckFINDERs have been installed at this facility and many more are planned for use in the areas of manufacturing, trouble-shooting, and laboratory analysis. Previous magnification methods involved the use of optical aids such as standard bench magnifiers and microscopes ranging in power from 3.5X to 64X. The addition of the speckFINDER has made the tasks of microscopic inspection and image capture much easier and user-friendly.



#### **speckFINDER Applications**

The speckFINDER is used to inspect solder fillets and to detect microscopic shorts such as hairline solder bridges and heel bridges. The 9-inch working distance under the unit is sufficient for repair work. The “BoosterBox” coaxial light source for the speckFINDER improves inspection for open and shorted circuits by providing light that is free from side or angular glare. Personnel involved with trouble-shooting use the speckFINDER to identify cracked components and for looking into deep assemblies illuminated by the penetrating light of the BoosterBox. The backlighting option illuminates multilayer boards to make discrepancies stand out. The video capture ability of the speckFINDER enables images to be saved for monitoring product and process variation. These images are sent electronically to others within the facility. In addition, the speckFINDER display screen allows multiple people to view the image at the same time.

#### **Key Benefits of Using the speckFINDER at this Facility**

The close proximity of the speckFINDER’s display screen to the operator and the work surface increases ergonomic comfort and improves eye-hand coordination. The workers train quickly and the unit is easy for them to operate. They have become quite comfortable using the speckFINDER and some operators are very protective of their unit! The adjustable-arm saves valuable workspace and moves easily out of the way when not in use.

The image quality on the speckFINDER is much improved and more realistic than previous CCD image systems tried at this facility. The speckFINDER’s zoom magnification, controlled by the touch of a button, is much easier to use than the complex setup with their previous system that required changing lenses using 1/2X adapters. In addition, the working distance on the previous system was limited and decreased as magnification increased. The working distance on the speckFINDER remains a generous 9-inches throughout the magnification range and provides ample room for repair work using tools.

The video capture feature enables pictures to be emailed to other support personnel for analysis without complex setup of additional equipment. Video capture with the speckFINDER involves just one PCMI card for a laptop or desktop computer. The composite video out signal can be used with a variety of image capturing devices.

#### **Quote from Quality Engineering Department about the speckFINDER**

“Our initial intent for the speckFINDERs we purchased was for Trouble Shooters looking for hard to find microscopic bridges and shorts. The units have proven very successful in this activity and the Trouble Shooters have found numerous other uses including identifying cracked components, looking into deep assemblies with the booster box, and relaying information to coworkers with the flat panel display allowing multiple persons to view at one time.

We have found the speckFINDERs very useful in our Engineering departments for documenting discrepancies, providing microscopic photographs for visual aids, and relaying information via E-mail and analyzing product with other support personnel.”