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Make Sure Every Bar Code Is Read

An integrator earns a \$50,000 data collection project involving 11 fixed-mount bar code scanners for an electronic components manufacturer.

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Written by [Dan Schell](#)

By keeping his client up-to-date on new AIDC (automatic identification and data collection) technologies, Greg Hilbert, president of Electronic Solutions, Inc. (Lafayette, IN), was able to land a \$50,000 bar coding project. The client, a manufacturer of automotive electronic components, had used Hilbert's company in the past for bar coding solutions. However, the company was having a problem with one data collection system Hilbert had not installed.

The application involved a vision system (i.e. a camera-style device connected to a decoder) used to track the production of printed circuit board (PCB) sensors. The sensors are designed for detecting whether a passenger in a vehicle weighs enough to withstand an airbag deployment. Each of the PCBs included a data matrix bar code that was scanned by the vision system at each step of the manufacturing process. The bar code data was used to verify that each PCB had passed the previous steps in the manufacturing process before proceeding on the production line. Several thousand PCBs a day go through this process. This data not only provides work-in-process tracking information; it is essential in the event of a warranty return.

"Approximately 2% of the bar codes were not being read [i.e. no reads] because the current system was not robust enough to read the poor contrast symbols on the components," Hilbert explains. "The production line operators had to manually enter the numbers for all of those components with unreadable bar codes. That extra handling of products was slowing down production."

How Will You Configure For The Optimal Read Rate?

About 80% of Hilbert's business is focused on installing fixed-mount bar code scanners. His vendor of choice is Microscan Systems, Inc. (Renton, WA). Considering the client was using data matrix codes (a 2-D bar code symbology), Hilbert suggested the Microscan Quadrus EZ CCD (charge-coupled device) scanner. This model can read various 1-D and 2-D bar codes, especially those that are laser etched, as is the case in this application.

One feature of the Quadrus EZ that was important for this application was the unit's IP (Internet Protocol) database. Each model of circuit board is a different color. Thus, for each model color, the scanner's camera has a different setting for how light or dark to take the picture. "With the Quadrus EZ, you can store those pictures in a database," Hilbert says. "It is like having up to 10 setups [i.e. templates] in one reader. The scanner automatically finds the setup that will provide the best read rate. This type of functionality allows you to run different types of products by the same reader without having to change the setup each time." Other features of the Quadrus EZ that were used for this application include:

- continuous capture functionality
- no-read image capture and retrieval
- upgradeable Flash memory

- Ethernet connectivity
- x-pattern projection positioning scanner for best read rate
- green flashing light for a good read.

Electronic Solutions had to integrate the Quadrus EZ with the customer's Allen Bradley (Milwaukee) PLC (programmable logic controller). Part of this integration involved configuring the Quadrus EZ to work with varying degrees of image contrast/quality and changes in ambient lighting. Hilbert has several years of experience installing similar systems for tier-one suppliers in the automotive industry.

One Bar Code Scanner's Success Leads To 10 More Sold

After installing one Quadrus EZ on a production line, the customer eliminated the no-reads it had experienced with the previous system. "Since the manufacturer no longer has to handle a large number of products with unreadable bar codes, systems engineers can now focus on continuous improvement instead of troubleshooting their data capture system," explains Hilbert.

Electronic Solutions provided on-site support and training on the basic functionality of the smart cameras and explained the system's terminology with the PLC system personnel. Based on the success of the first scanner, the integrator sold and installed 10 more Quadrus EZs. The settings from the first reader were simply loaded into the other readers to speed up the setup time.

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