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## Data Matrix symbols help Biosite cut waste, save time and save lives

Seconds count during a heart attack. That's why precision counts at Biosite, which manufactures test panels which can be analyzed in a portable test unit that can determine what type of heart attack is occurring within 15 minutes, compared to the one or two hours usually required for traditional lab tests. Precision and accuracy are critical to Biosite's operations, which is why the company selected Microscan to help improve production tracking and prevent errors.

Biosite's products include the Triage® Cardiac Panel, which analyzes blood samples to diagnose heart attacks in about 15 minutes. The portable test unit is about the size of a desktop telephone. Blood samples are placed on a cartridge-type panel that is inserted into the test unit for processing. To ensure accuracy and performance, Biosite tests and inspects each panel as it is being manufactured, which requires the company to record millions of ID numbers and quality control results each day. Biosite encodes a unique ID number and lot code in a bar code on each panel to facilitate the process.

"If we can't track the part, we can't use it. So if the bar code doesn't read we reject the part," says Biosite's Brett Fogg. "The quality of our bar code reading has a direct impact on our production."

Limitations to Biosite's legacy bar code scanning system led to excessive amounts of wasted product. Slides are identified at four different quality control and production points. If the bar code fails to read at any of them, the product is scrapped. Because of Biosite's high production volumes, even small error rates produce a significant amount of expensive scrap, so the company sought to improve its bar code reading capability.

Previously, Biosite identified products with a Code 39 bar code that ran the entire length of the slide. "The bar code was huge, and there really wasn't enough room for it," says Fogg. "There is not a lot of space available on the product, and we couldn't produce the bar code according to the ANSI-standard specifications because we couldn't get the right height-width ratio."

To compensate for the symbol quality, Biosite used an expensive machine vision system to read the bar codes, but that didn't solve the problem.

"Reliability was kind of shaky," says Fogg. "There was probably nothing wrong with 90 percent of the products we rejected, except that we couldn't identify them."

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Biosite worked with Tensor Automation, a specialist in automated tracking and inspection technologies, to improve its product identification. Tensor recommended marking slides with Data Matrix two-dimensional bar codes, which can easily encode Biosite's 10-digit identifier in the available space and is much more forgiving than Code 39 in challenging reading environments.

The next step was to find the Data Matrix reader that would provide the most accuracy and reliability in Biosite's operations.

"We no longer had to use machine vision, so we evaluated several different reading technologies," says Fogg. "CCD cameras worked OK, but they were cost prohibitive. After we tried Microscan, there was really no reason to try anything else," says Fogg.

Biosite selected Microscan's Quadrus® MINI high resolution imagers, which can read small Data Matrix symbols and many other bar code formats in any orientation, and perform up to 10 decodes per second. The Quadrus MINI measures just 1 by 1.8 by 2.1 inches and weighs less than two ounces.

"Microscan was an easy selection for this application," says Alan Eddy of Tensor, which integrates laser, CCD or machine vision technologies into systems, depending on customer requirements. "The small scanners fit very well into the production lines, and they required very little set-up. They also cost much less than some other alternatives."

Up to four Microscan Quadrus® MINI scanners are clustered at quality control points on the production line. They read bar coded panels approximately every 1.5 to 2 seconds and report the data to Biosite's production control system. The scanners have no trouble keeping up with the high-volume operation, and have improved both the quantity and quality of data Biosite uses for production monitoring and statistical analysis.

Most importantly, the system has reduced waste by improving product identification.

"We've increased our read rate between three and five percent, which is huge," says Fogg. "Our reject rates are down, and our bar code reading accuracy is between 99.6 and 99.8 percent, with most of the misreads occurring because of bad printing."

As a result, waste is down, productivity is up and Biosite is maintaining its rapid growth. Biosite products are used in more than 50 percent of U.S. hospitals and in more than 60 countries around the world. Fast, reliable, accurate products have made fueled Biosite's growth, and fast, reliable, accurate bar code scanning on the production line supports it.



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