

ELECTRONICS MANUFACTURING

Application Case Study - ATC Automation

Microscan Imagers Ensure 2D Code Readability and Increase Efficiency During Manufacturing of Miniature Identifiers

Company Profile

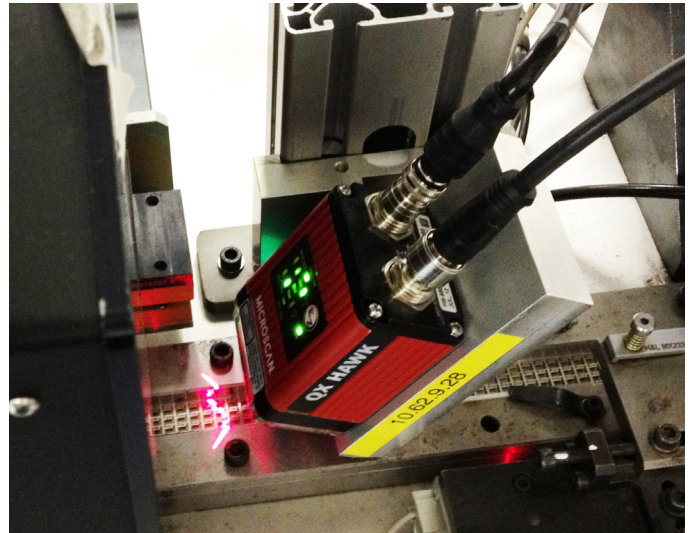
Established in 1991, ATC Industrial Automation has been supplying industrial components and creating solutions for the industrial automation industry in Ireland for over 21 years. ATC is a customer-oriented company involved in providing solutions and products for their customers in the manufacturing industry in Ireland and Northern Ireland. ATC Automation specialises in providing solutions for Machine Vision, Sensors and Safety, Automation Systems and Control Components applications.

The Challenge

One of ATC's customers, a leading supplier of electrical and fiber optic interconnects, switches and application tooling, manufactures miniature identifier chips that provide unique product traceability of work-in-progress (WIP) printed circuit boards (PCBs) in medium to high-volume electronics assembly processes.

The pad measures only 2.80mm by 1.80mm, and is just 0.30mm thick, requiring minimal space on a PCB. Each pad is laser etched with data using a Data Matrix 2D code that provides explicit identification for 1 billion unique combinations. This is particularly important for customers that have multiple surface-mount technology (SMT) lines or multiple contract manufacturers. Every single board remains unique, providing traceability to the production equipment and/or supplier used for a particular board. It also results in very significant cost savings as all of the infrastructure required is already in place on the customers' SMT lines.

In the course of the end customers' PCB manufacturing process, the pad is loaded into a standard SMT chip shooter and then picked-and-placed alongside other components and the PCB is solder reflowed. Each PCB



The QX Hawk Flexible Industrial Imager checks the high density Data Matrix code on the miniature identifier pads.

thereby gains a unique identification. This provides traceability data not only for the PCB, but also for all other components contained on the populated PCB and for the final assembled device.

It is paramount that the high density miniature Data Matrix code is present and readable on each individual pad. Therefore, the manufacturer looked for a reliable solution to ensure code readability during the manufacturing process of the pad reels.

The Solution

In the past, ATC had already installed the Quadrus EZ fixed 2D barcode reader from Microscan in the customer's production process, and recently also acquainted them with Microscan's latest products.

■ **Requirement:** Ensuring Data Matrix code presence and readability on traceability pads.

■ **Project:** Automated quality validation solution to read a miniature 2D code

■ **Solution:** QX Hawk flexible industrial imager from Microscan.

■ **Result:** Guaranteed code readability, and increased efficiency during the manufacturing process.

MICROSCAN

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“Our customer was pleased with the performance of Microscan’s products, and were very interested in the benefits that the next generation imagers from Microscan could bring,” Brian Walsh, Engineering Sales Manager at ATC Automation explains.

They opted for the QX Hawk flexible industrial imager from Microscan, which is the first imager in the world to be fully integrated with liquid lens technology, enabling infinite focus flexibility. Bridging the gap between ease of use and performance, the QX Hawk features a high resolution modular optical zoom system, aggressive X-Mode decoding, and simple plug and play connectivity. The QX Hawk imager easily reads any barcode or 2D symbol, including challenging 2D direct part marks (DPM), in any environment, within seconds of installation.

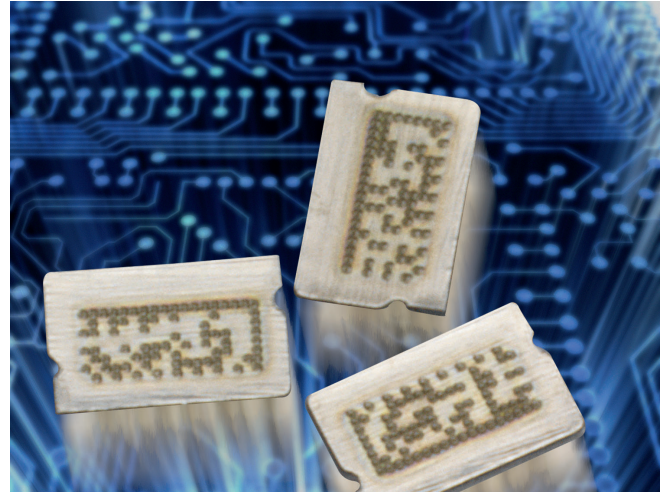
The QX Hawk ensures readability by decoding the Data Matrix code on the pads, and double checks that the code is present and that the data it contains is logged correctly. ATC Automation developed a solution with the QX Hawk that reads four codes within the image field of view, arranges the read data into a specific sequential format with separators and sends the codes in the correct sequence to a database. This was achieved using Microscan’s ESP (Easy Setup Program) software and the integrated Ethernet networking which enables high speed communication between the QX Hawk and the server.

“The QX Hawk delivers very impressive read rates on the extremely low contrast codes,” Brian Walsh, Engineering Sales Manager at ATC Automation comments. “Together with the miniature low resolution codes, this poses a unique reading challenge that its decoding algorithms can easily handle. We initially thought that we might need additional external lighting, but the QX Hawk had no problems reading the miniature codes on the pads just using its internal LED lighting system,” Mr. Walsh concludes.

The Benefits and The Future

Thanks to the solution, ATC Automation and their customer can be sure that the codes on the pads are logged correctly and that they are readable. In addition to selecting the most cost-effective automated solution to the challenge of WIP product traceability in the electronics manufacturing industry, the end users can count on full traceability of the PCBs during and after the production process, avoid downtime and failures, increase efficiency, and reduce costs.

The manufacturer of the pads has also improved efficiency in their own production process. “Instead of reading just one pad at a time, by moving a barcode reader across the production line, the QX Hawk imager can handle reading four pads simultaneously from a stationary position,”



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Mr. Walsh explains. “This significantly speeds up the production time, as well as avoids downtime as there are no moving parts in the decoding solution.”

“We are also looking into the additional benefits that a machine vision solution could offer, especially the Vision HAWK smart camera from Microscan,” Mr. Walsh concludes. “Machine vision validation, grading and verification could offer our customers detailed information regarding code quality.”

OVERVIEW:

- **Industry:** Electronics manufacturing
- **Application:** Data Matrix code reading during production process to ensure code presence and readability
- **Products:** QX Hawk Flexible Industrial Imager from Microscan
- **Reseller/integrator:** ATC Automation

Founded in 1982, Microscan has a strong history of technology innovation which includes the invention of the first laser diode barcode scanner and the 2D symbology, Data Matrix. In 2008, Microscan acquired the Siemens Machine Vision division. Today, Microscan remains a technology leader in automatic identification and machine vision with extensive solutions for ID tracking, traceability and inspection.

MICROSCAN®

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