

ELECTRONICS MANUFACTURING

Application Case Study – Innovar Systems Limited, Ohio, USA

Microscan Vision MINI® Xi Smart Camera Provides Product Authenticity Documentation for Electronics Traceability System

Customer Profile

Innovar Systems, a premier supplier of traceability systems worldwide, has been applying barcode reading and machine vision solutions in automated manufacturing environments for over 20 years. Innovar's **ENFORCER®** Traceability Systems are used in the electronics manufacturing, medical device, and automotive industries to provide a manufacturing history of components, ensuring auditable processes and high-quality products. As a member of Microscan's Integrator Alliance, Innovar sells the complete line of Microscan machine vision and barcode reading products, allowing them to provide customers with complete and cost-effective solutions.

The Challenge

The reputation of Innovar's customer, a Forbes Global 500 company and a manufacturer of circuit breakers and other electronic components, is founded on the production of high-quality products. With a dramatic rise of counterfeit product in the marketplace, Innovar's customer decided to take action to defend the integrity of its products by implementing a system to verify product authenticity. Inkjet marking systems were implemented by the customer to apply a Data Matrix symbol to their product, but complications with the original integration of the customer's inkjet system resulted in unreliable marks, making downstream product identification difficult.

The Solution

The customer originally contacted Innovar to integrate barcode readers for part traceability into their circuit breaker test equipment, which Innovar had already installed on the customer's 19 production lines. Initial testing using Microscan's UID DPM Verifier clearly demonstrated mark quality deficiencies, with read rates below 50% and an



A turnkey inkjet mark application and verification system provides product traceability for a manufacturer of circuit breakers.

average AIM DPM grade of "F". In order for the customer's marking system to be a viable solution for providing clear traceability data using Data Matrix marks, the marking system integration would need to be enhanced, and Innovar was contracted for this in addition to the barcode reader upgrades.

The customer's original system was engineered for the purpose of marking a symbol on a circuit breaker as it passed by on a belt-style conveyor to provide a means of acquiring traceability data. Deviations in belt speed, worn belts, and maintenance concerns on the inkjet unit were found to be contributors to poor mark quality. Therefore, Innovar proposed installing a new piece of equipment into the existing systems to resolve the mark quality issue and ensure all components could be properly identified and traced using the marked symbol.

- **Requirement:** Provide a solution to ensure product traceability and authenticity.
- **Project:** Use smart camera and imager technologies to track product through the manufacturing process, record process information in a traceability database, and alert manufacturer of marking deficiencies.

- **Solution:** A turnkey hardware and software system that combines Innovar's custom equipment and software capabilities with Microscan machine vision and barcode reading solutions.
- **Result:** Full product and process traceability at the unit level, reduced manufacturing cost, and assurance that only authentic, quality product is released to the marketplace.

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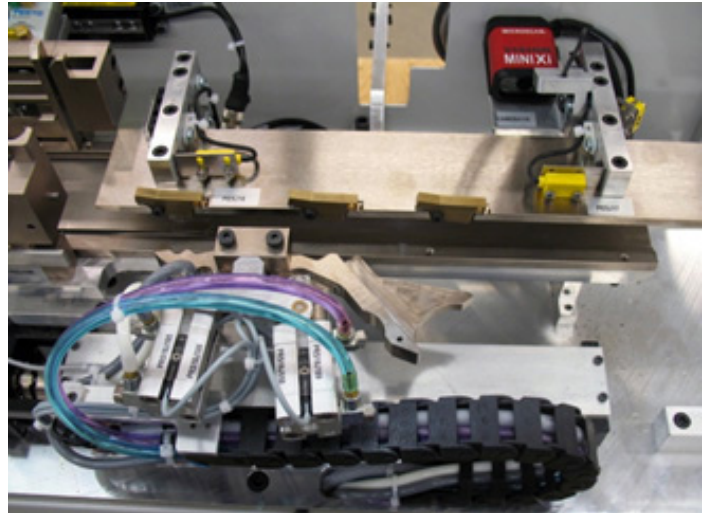
Innovar's new equipment indexes circuit breakers in a servo-controlled nest that accurately moves the breaker through the marking field at constant speed. In order to ensure mark quality, a Microscan Vision MINI[®] Xi Smart Camera was integrated into the customer's existing marking equipment to perform in-line verification, grading marks and ensuring that they are produced at high-enough quality to retain their legibility throughout the entire manufacturing process. Based on minimal acceptable grades of barcode quality, Innovar's complete marking and barcode verification system is immediately able to sort and reject components that do not meet the required tolerances. This not only ensures maximum symbol read rates for component identification downstream, but provides trending data that can be used to alert maintenance personnel when the inkjet marking system requires attention.

To provide the barcode reading functionality for the customer's circuit breaker test equipment, Innovar chose to integrate Microscan's MS-2D imager into the customer's 122 testing systems. After integrating the MS-2D and Microscan's Vision MINI Xi Smart Camera into their systems, Innovar's customer was able to identify each unique circuit breaker with read rates in excess of 99%, where test data for each breaker is logged with the breaker's serial number. This allows the customer to cross-reference returned product by scanning the components to confirm authenticity and to retrieve historical production data for each unique serial number.

The **ENFORCER[®]** Traceability System provides other benefits to Innovar's customer through the integration of additional Microscan products. Microscan's MS-2D imagers are installed at the customer's packaging station to read codes on breakers, ensuring that only authenticated quality products ship and providing a link between packaging labels and the breakers contained within the package. Microscan MS-2D imagers are further employed at rework stations to identify breakers that fail during testing. A simple decode retrieves test result data to provide the technician with insight into the reasons for failure.

The Benefits

- Breaker authenticity can be verified by a simple product ID scan.
- Process results available at the device level provide better insight into manufacturing floor activity.
- Scanning during packaging ensures only quality and verified authentic products are sent to end customers.
- In-line verification by Microscan machine vision systems provides mark quality trending to enable marking system maintenance, maximizing quality and minimizing downtime.



Servomotor-controlled actuator and Vision MINI Xi Smart Camera ensure inkjet mark quality.



Custom IP52-rated packaging of Microscan MS-2D Engine with serial communication capability.

OVERVIEW:

- **Industry:** Electronics Manufacturing
- **Application:** Ensure circuit breaker authenticity and traceability
- **Products:** UID DPM Verifier, MS-2D Imaging Engine, and Vision MINI[®] Xi Smart Camera from Microscan
- **Reseller/integrator:** Innovar Systems Limited, Ohio, USA

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