Application Case Study - Boehringer Ingelheim, Greece

All-in-one automated printing and inspection solution ensures traceability throughout the pharmaceutical supply chain

Company Profile

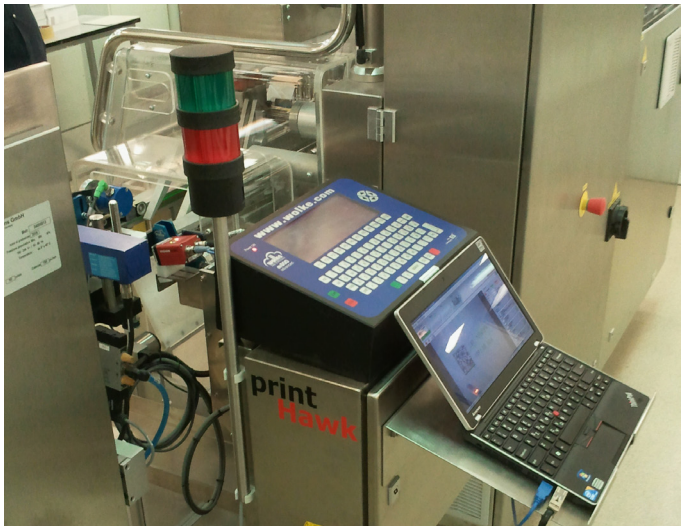
Boehringer Ingelheim is a group of companies dedicated to researching, developing, manufacturing and marketing innovative products of high therapeutic value for human and veterinary medicine. It is one of the world's 20 leading pharmaceutical companies. Boehringer Ingelheim was founded in Ingelheim am Rhein (Germany) in 1885, where the corporate headquarters are still located.

The Challenge

The European Union (EU) has adopted a new directive which aims to improve patient and consumer safety by preventing falsified and counterfeit medicines from illegally entering the supply chain. The European Medicines Agency defines falsified medicines as those which may contain fake packaging, the wrong ingredients, or low levels of the active ingredients. Counterfeit medicines are medicines that infringe trademark law or do not comply with intellectual property rights. Falsified and counterfeit medicines do not pass through the quality, safety and efficacy checks required by the EU, and pose serious risks to patients and consumers.

The new directive standardizes safety and control measures across Europe by applying new requirements, such as mandatory features on the outer packaging of medicines and more thorough inspection of pharmaceutical ingredients. The directive was adopted in July 2011, and EU member states were required to start applying these measures in January 2013.

The mission of Boehringer Ingelheim can be summed up in a single phrase: *value through innovation*. Always at the forefront of innovation, the company decided to implement a state-of-the-art solution for ensuring that their products not only meet, but exceed these new requirements.



Data and print quality are inspected by Elchema's printHawk solution using the Vision HAWK smart camera and AutoVISION machine vision software from Microscan.

The Solution

To find a prototype solution for a robust production environment that could be implemented quickly in their facility in Greece, Boehringer Ingelheim contacted Microscan Partner, Elchema - Palinginis Bros. Elchema has operated in the Greek market for over 35 years and specializes in research, design, implementation and support of pharmaceutical applications.

To avoid counterfeit drugs from entering the supply chain, each box or container (for pills, tablets or syrups, for example) needs to be marked with production data as well as a unique serial number. This data will be used to track the drug though its lifecycle, and through the supply chain – from production to the consumer – ensuring the validity and traceability of the product. Machine vision can help to read these text strings reliably, at high speeds.

- **Requirement:** Ensuring that mandatory features are correctly marked on the outer packaging of medicines and implementing a rejection system for faulty packaging.
- **Project:** An all-in-one automated printing and inspection solution for pharmaceutical packaging to ensure traceability throughout the supply chain.
- **Solution:** printHawk solution from Elchema with Microscan Vision HAWK smart camera, AutoVISION™ machine vision software, and Simatic S7-1200 controller.
- **Result:** Full compliance with EU directives and other regulations or mandates for pharmaceutical packaging, full traceability, and ensured patient and consumer safety.

MICROSCAN®

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Optical character recognition (OCR) and subsequent data retrieval help to ensure the smooth flow of information throughout the manufacturing and distribution process.

Elchema developed the all-in-one printHawk solution for printing and controlling production data specifically for the pharmaceutical industry. The printHawk solution prints the two-dimensional (2D) Data Matrix code, as well as the production data in text format. Then the data and print quality are inspected by the Vision HAWK smart camera from Microscan. “With the AutoVISION machine vision software connected to a Vision HAWK, you can build an application within minutes, allowing us to invest our time in the actual integration of the solution in the production environment,” said Alexios Palinginis, Owner and General Manager at Elchema.

The Vision HAWK captures an image of the product packaging and processes the data to validate the information printed on the products. During validation, the same Vision HAWK smart camera decodes the Data Matrix code and reads the OCR text, identifying and comparing this information with the required production data. In case of an error, the faulty boxes are immediately removed from the conveyor system and the rejection is confirmed.

At the core of all functional subsystems of the solution, including the conveyor belt, printer, camera, and rejection system, is the Simatic S7-1200 programmable controller, which, despite its small size, fully satisfies all of the high programming requirements. As the production line reaches speeds of over 100 boxes/min, and because of the required positioning accuracy and printing quality, a high-resolution encoder (200kHz) is used. The Simatic S7-1200 accurately controls the position of the box and orchestrates the operation of individual subsystems in the high-speed application. “When running in production, the Vision HAWK smart camera delivers the robustness demanded of an industrial environment in one package, free of a general-purpose PC,” Palinginis explains. “Users can introduce production parameters, or even alter recipes, using Microscan’s AutoVISION software.”

The Benefits

Since implementation of the solution, Boehringer’s products and packaging are in full compliance with the EU directives for pharmaceutical packaging, the medicines can be traced throughout the supply chain, and patient and consumer safety is ensured. “We are very pleased with the high-end capabilities of the Vision HAWK smart camera and its unique OCR capabilities together with the AutoVISION machine vision software,” Palinginis concludes. “They fulfill the highest pharmaceutical standards that need to be followed by this well-established multinational company.”

AutoVISION software ensures Data Matrix code presence and validates OCR readability in pharmaceutical packaging.

The printHawk solution includes a printer, the Vision HAWK smart camera with AutoVISION software, and a rejection system.

Overview

- **Customer:** Boehringer Ingelheim Greece
- **Industry:** Pharmaceutical manufacturing
- **Application:** Ensuring Data Matrix code presence and validating optical character recognition (OCR) readability in pharmaceutical packaging
- **Products:** printHawk all-in-one solution from Elchema with Microscan Vision HAWK smart camera, AutoVISION™ machine vision software, and Wolke m600 advanced thermal ink jet printer
- **Reseller/integrator:** Elchema - Palinginis Bros

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.

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www.microscan.com

Product Information:
info@microscan.com

Technical Support:
helpdesk@microscan.com