

Quality check data

Using a computer vision system with 10 FQ2 cameras

A state-of-the-art packaging machine that is compact, reliable, full of innovative features and whose parts are all easily accessible. These are the features of the new line of stick packaging machines, designed by Omag in collaboration with Omron for the manufacture of Dompé's drug, "Okitask".

In a market where outsourcing seems to have become the order of the day, there are still those who firmly believe in relying on home-grown engineering. With this in mind, there is much to learn from Omag. With over 40 years' experience in manufacturing machines for the food and pharmaceutical industries, this Italian company, based in Gradara in the Province of Pesaro e Urbino, is completely self-sufficient.

From designing the systems, to creating mechanical components in its workshop, from electrical systems to software development, everything is done in-house to enable the company to meet extremely specific requests. Perhaps the best example of this working approach is the new range for packaging Okitask. The system, designed for Dompé, includes an innovative labelling and control system that was designed and built in-house in collaboration of Omron. In order to meet the client's requirements, this is a computer vision system that uses ten FQ2 cameras to quality check the data (expiry date, batch number) printed on each individual package.

FQR Smart Cameras respond to specific requirements

The machine designed by Omag is for "primary" packaging. The packaging in close contact with the medicine determines, among other things, the product dosage inside the individual packages. It begins with a reel of film that is unwound and worked in order to form the sachets to be filled, sealed and positioned inside the pouches for sale. All the data needed to market the product (batch number and expiry date) is also laser-printed during this stage. In addition to labelling, this is a process that also includes rigorous checks of all the data provided during manufacture. The batch number and expiry date are essential parameters in the field of pharmaceuticals for ensuring that the information conforms to market standards and is consequently used correctly by the consumer. Roberto Filippucci, Automation and System Manager and Omag employee, explains: *"A product with missing or unclear information is not compliant and the manufacturer would be forced to withdraw it. This is why quality control is becoming essential".*

This is why Omag has developed a computer vision system that uses ten FQ2 Smart Cameras, a recently-renovated range of Omron cameras, to respond to extremely specific requirements, including OCR scanning. Not only does the application determine whether or not data is present, but it also ascertains what has actually been printed on the pack by comparing it with the expected result. This all happens in a very fluid way: each camera "reads" what the



Machine CS/10 OMAG used for the production.

laser marker has written and sends it as a string to the controller (via Ethernet) to be compared with the predefined data entered by the operator, individually and on each track (for a total of ten tracks).

A further guarantee from the illuminator

Particular attention has been paid to the position of the cameras and to studying the lighting conditions in the working environment. The glossy wrapping used means that the lighting system had to be chosen carefully in order to avoid any glare that could hinder the reading. This led to the decision to use an additional high-efficiency illuminator, in order to guarantee that interference from environmental factors is negligible. Working in collaboration with Omron's technical staff, the system was then inspected to check it was able to deliver almost complete accuracy. Characters engraved using a laser to remove a top coloured coating to reveal a layer of silver aluminium underneath are "read" with almost complete precision. The company's staff emphasise that this means that the possibility of non-compliant products being screened as "good" products is practically zero. Whenever a camera detects an incorrect code, production is stopped automatically.

Conformity rhymes with versatility

Data is exchanged between the control unit and the ten cameras over the Ethernet. The controller collects information from the ten linked cameras and compares it with master data pre-set by the operator. By doing this, Omag has been able to simplify wiring and avoid cables carrying digital signals being pulled out. Just one Ethernet cable is needed to connect all the cameras in real time.

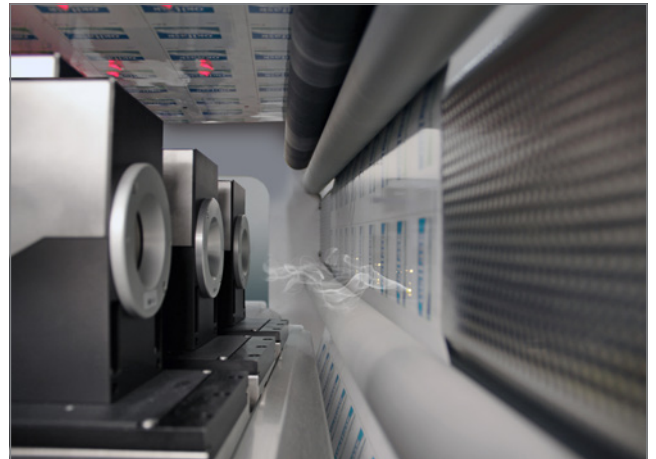
The efficiency of the communication provides full accessibility to all key management parameters: levels of consistency for the reading, prescription management (for example, it is possible to configure the system to read data written in different positions on the package), data matrix and various types of checks.

As a whole, the machine stands out because of its clean lines, compactness, ease of inspection and ease of assembly and disassembly. These are qualities that make it attractive for all fields, including pharmaceuticals, that require mechanical parts that come into contact with the finished product to be cleaned and sanitized, and for environments that are limited in size. On a strictly technical basis, the solution is also easy to program and ensures interoperability with third party systems.

Roberto Filippucci concludes:

"This machine contains several innovative components from a mechanical point of view and in terms of automation. We have revolutionised materials handling, replacing the pneumatics with brushless motors, we have worked on the positioning of sachets and on the automatic movement of the dispenser. The addition of a new laser marking system and computer vision system completes the picture and offers Dompé a machine that, in addition to ensuring the correct dosage of the medication, guarantees that the information on each pack is fully compliant."

Characters engraved using a laser to remove a top coloured coating to reveal a lower layer of silver aluminium are "read" with almost complete precision. Each FQ2 Smart Camera reads what the laser marker has written and sends it as a string to the PLC via Ethernet to be compared with the predefined data entered by the operator. The glossy wrapping used has led to the use of an anti-glare lighting system.



The characters, engraved by laser ablation of a colored coating on a lower layer of silver aluminum, are "read" with a precision close to 100%. Each camera Smart Camera FQ2 reads what he has written the laser marker and sends it as a string to the PLC via Ethernet to be compared with the data information entered by the operator. The presence of a film of wrapping material has polished led to the use of a system of lighting anti-glare system



Automatic system for the statistical control of weight online



Oki Task packaging



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About Omag

Since 1975, OMAG has been designing and manufacturing bag-sealing machines, fillers and augers for the food, pharmaceutical, cosmetics and nutritional sectors: packaging machinery that are specially designed to “automatically” resolve the needs of innovative packaging solutions. To complete their machinery line-up, they’ve designed models that are customized for the pharmaceutical sector, the PHARMASACHET and PHARMASTICK.

About Omron

Omron Industrial Automation is a leading manufacturer of high-tech products and solutions for industrial automation. The company is part of the Omron Corporation founded in 1933 in Kyoto, Japan, and employs more than 37,000 people worldwide. The wide product range includes control, drive and safety technology, image processing and sensor systems, as well as control and switching components. The aim is to provide engineers with demand-driven, integrated automation solutions from a single source. In addition, Omron offers its customers comprehensive application know-how, as well as region-wide on-site service.