



Hitachi Vision Systems Ensure Success with Secure Product Information

„Who? Where? When? How long?“

These are the questions when it comes to precise product coding in the food and beverage industry. It must be possible to reliably retrieve data on the production lines or products in every production facility. In addition to being a legal requirement, this is also in the interest of food producers.

What is new is that „How good?“ is now asked: about the code-readability.

Imprecise printing or questionable legibility of product coding leads to complaints and pallet returns in some target markets worldwide.

The suppliers of printing and control systems with their product portfolio are at the core of these requirements - including, of course, in the new building project of the Hochwald Foods GmbH group of companies in Mechernich, North Rhine-Westphalia, Germany.

AT A GLANCE

CUSTOMER

Hochwald Foods GmbH,
Mechernich site

INDUSTRY

Food and dairy industry

HITACHI PRODUCT

MC20 Vision System

FILLING SYSTEM MANUFACTURER

SIG 17 lines, Elopak 1 line



With a processing capacity of up to 800 million kilograms/year currently on 17 filling lines with a capacity of up to 24,000 cartons per hour, this project is one of the landmark projects of the European dairy industry in recent times. Hochwald has been producing dairy products such as H-milk, H-cream, H-milk mixed products and condensed milk since January 2022 at this site.

Included here are: Hitachi's high precision camera solutions. They control and store product labelling for a period of five years in 15 SIG carton packaging lines and an Elopak packaging machine. The packaging portfolio to be controlled includes 200ml, 500ml, 1000ml and 1500ml cartons with more than 400 designs.

Only OK codes for customer

From the very beginning of the project at Hochwald, Hitachi could rely on a successful pilot project and test systems at SIG customers, in which the readability of the code imprint had been tested. The primary focus for product quality assurance is OCV (Optical Character Verification) detection. Hitachi is one of the few vendors on the market that relies on OCV detection systems. This technique checks the DOT Matrix fonts of continuous inkjet printers and recognizes the relative character form as well as DOT size and shape. Good or bad markings can be determined in a controlled manner by means of customer-specific threshold values. Possible misinterpretations from the consumer's point of view can also be included. This high-precision inspection system significantly minimizes pallet reject rates, product loss and rejection.

A second key aspect for secure product tracking is a review of the data. In the assigned NAS server (Network Attached Storage), the system stores two terabytes of data: In this way, every code from production

is stored in a traceable manner. The storage volume covers a production period of five years before the oldest data is overwritten by new camera images.

What happens if the code is not legible or not legible enough?

Products with low print quality are first recorded in the storage unit - like all other products - and then rejected. For this purpose, an ejector is controlled by the camera unit, which ejects milk packs with faulty codes into a collection location. With the help of continuous data storage in the NAS server, production management can also subsequently determine whether all incorrectly printed packages have actually been ejected from the line. IO and N/IO reads are recorded and remain permanently available in the unit internal memory. Customer complaints can also be traced so that the pallet only contained products with the correct print at the time of delivery.



The Hitachi camera system scans each item for correct product marking.

With or without!

A system for code printing and control from a single source minimizes interfaces in coordination and in the data concept. With its MC20 camera system, Hitachi printing systems, HX controller and HMI, Hitachi is perfectly positioned to meet this requirement. The integrated 5-step procedure for matrix analysis enables image processing, including colour-greyscale filtering and character contrast in a segment analysis and reliable evaluation of the code by the software.

The Hochwald Group is active at a total of nine production sites. It was therefore important for the new dairy plant in Mechernich that the new carton lines meet the Company standard and integrate the existing printing system.

No problem for Hitachi: Existing customer specifications require integrating an alternative printing system into the system.

Hitachi's vision system is flexible here and can also communicate with other printing systems.



Compact, hygienic, easy to use

Vision systems need to fit seamlessly. What does this mean in detail? As a line and OEM supplier, SIG has to integrate the systems into its line designs: This requires 3D development drawings with all brackets and special profiles, available from Hitachi as standard. The integration and consistent presentation of the systems is thus convenient and quick to implement.

In addition, all hygienic design specifications must be complied with during integration into the overall concept - a standard requirement in the food industry.

The space-saving installation of the systems in the line also fits into this concept: The Hitachi modules, installed above the conveyor belt, do not require any additional space – the milk packages pass under the vision system.

Particularly in production facilities with numerous different packaging sizes from 0.2 to 1.5 litres - as at Hochwald - the systems must be able to be set precisely to different packaging formats.

With the Hitachi solution, the print system and camera unit can be

adjusted using spindle screws and counter mechanisms: The spindle arrangement for the printhead and camera allows very precise and parallel positioning. Clear indicator scales make it easy for operators to set the correct position.

The result: Fast, precise and reproducible application and reading of the codes.



Linking systems

Integrating equipment into complete lines is a matter for detailed coordination between line and system suppliers and the customer, especially in large-scale projects such as those at Hochwald. This becomes particularly important if data from the line is to be processed in a highly automated line – such as in Mechernich – and continuous signal and data use is required. The Hitachi system is connected to SIG's data

transfer solution based on the OPC-UA protocol and is thus linked to the control of the MES solution. Due to this close connection, the data connection of the camera system is thus also completely standardised for other applications in the SIG lines.

A benefit that should not be underestimated, according to Thomas Otte, Technical Manager at Hitachi.

„Our vision system is equipped with a predefined connection to the carton filling machine so that customers can rely on functioning signal exchange without complex interface definition.“

Thomas Otte, Technical Manager at Hitachi



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