

Label Control - Nice to have in the Past, Mandatory Today

- The faultless décor of beverage containers is becoming increasingly important. In addition to the integrity of the labelling, the logical correctness must be checked: EAN barcode, BBD, language variant
- The trend is driven by (1) the marketing of the beverage manufacturers, (2) the increasing demands of the end consumer and (3) by legal requirements or certifications
- The miho EC-CAM camera-based label inspection checks the container's equipment either directly in the unit (ETIMA, Sleever) or in free flow
- Alternatively, the miho Allround 360° inspection checks all features in full as the last check before packaging.

The requirements for faultless, uniform and flawless product presentation at the POS (point of sale) play an increasingly important role.

Twenty years ago, the presence of a small number of different labels was still checked visually on a random basis or possibly even with simple photoelectric proximity switches. Whether a label was damaged, whether it was placed correctly and whether it was the right one - all these things only played a minor role.

The trend in full equipment control, illustrated by way of example: In addition to checking the integrity (left), checking the logical correctness, such as EAN barcode, BBD, language variant (right) is becoming increasingly important.

Today, the marketing efforts of beverage manufacturers and increasingly demanding end consumers, who prefer to reach for flawless and undamaged beverage containers on the shelf, are fueling each other. Moreover, there is a trend towards more critical consumer protection, with the labelling of allergens, non-alcoholic products, dietetic foods, organic products and their identification labels, all of which must be ensured by the bottler. In a worst-case scenario, an incorrectly labelled container can endanger the health of the consumer!

In the meantime, there are also a large number of guidelines and regulations, such as the EU Food Information Regulation (Regulation (EU) No. 1169/2011), the US FDA guidelines on food labelling or the British Retail Consortium (BRC) guidelines on food safety, which must be observed. Non-compliance or incorrectly labelled containers can result in an expensive recall, with the risk of loss of certification, often also linked to a fine. Not to mention the loss of image, which can be even more serious.

In the export sector the monitoring of the correct language version of the container equipment is added and the costs for a recall are much higher. Here usually faulty batches are sent back to the manufacturer or the manufacturer has to arrange the recall himself.

Track and Trace, in connection with special requirements for traceability, is also being used more and more frequently. This was shown by the RUSSIAN FEDERAL LAW NO 488-FZ on serialization with cryptographic protection from 2018, which regulates the complete traceability of alcoholic beverages such as alcopops, wine and spirits (beer is currently still excluded from this) and is intended to prevent tax fraud through faked alcoholic beverages.

There are two main reasons for the faulty equipment of beverage containers: the operator and the technology.





High quality and impeccable equipment, illustrated by examples: In addition to the presence of the ACL, its accuracy must also be checked. In this case, the control of the logical correctness is ensured by the EAN barcode in addition to significant features. (Photo: Erwin Dietz GmbH, Osterburken)

Every change of product variant requires an action by the operator of the labeler or the sleeves. Placing the stack of labels in the various label carriages carries the risk that the operator will insert the wrong labels, not insert the labels correctly in the carriage or simply forget to change the labels. In addition, the best-before date (BBD) printer carries the risk of incorrect BBD printing or incorrect adjustment.

However, even with the technology used, it can sometimes jam and the labels are applied to the container at an angle, the label carriage damages the labels, or the nozzles of the BBD printer (ink jet) are clogged.

Because of these numerous sources of error, you should always check the equipment of containers or packaging! Logically, this should take place immediately after or during labelling. Once the product is packed, it is too late and the faulty product is on its way to the consumer.

The inspection of labels for presence, correct position and integrity should therefore be part of the basic equipment of a modern filling line today, regardless of whether the line has a capacity of 5,000 or 50,000 containers per hour. With the ultra-modern and powerful industrial PCs in combination with digitalized, high-resolution color cameras, LED high performance lighting and sophisticated software recognition

algorithms, the recognition and verification of significant information and contents, such as barcodes, 2D codes, BBD or even the verification of the correctness of the label is no longer a problem.

For Track and Trace, in addition to the individual recognition and verification of the labels, the recorded data is linked to a data package and forwarded

to a higher-level interface for further processing.

Today, all these are basic requirements for reducing expensive recalls, protecting the end consumer, maintaining the image, reducing product losses, and complying with legal requirements and specifications for merchandise management systems.

With the camera-based label inspection system miho EC-Cam, miho has a new system in its product range that meets all the requirements for checking the perfect fit of beverage containers. One or more camera units (digital color camera with integrated LED high performance lighting) are connected in a modular way to the multi-PC evaluation unit (Windows 10, 64 bit, image processing miho VIDIOS_SC®).

In this way labels can be checked for presence, correctness, intactness, position, barcode, 2D code and best before date.

Due to the special interaction of camera, lighting and mirror cabinet of the camera

Camera-based label inspection miho EC-CAM for inspecting the front and upper front labels (left) and the back label (center), directly in the labelling machine. Each label is completely inspected for integrity and correctness using a robustly constructed camera unit. Thanks to the large image field of the EC-CAM, containers up to a height of 320 mm are completely detected, and mechanical adjustment of the EC-CAM when changing bottle types is no longer necessary. The separate multi-PC evaluation unit (right) provides an overview, simplifies the automatic changeover of equipment variants and makes it easy to teach-in new equipment variants.





Further application examples of the miho EC-CAM:

Checking the vertical position of the sleeve, also in free passage (left). Equipment check of non-circular containers for spirits (right). The smallest label faults can be reliably detected with the stereo arrangement shown here.

module, containers up to a height of 320 mm can be imaged with only one camera module. The camera housing in IP 67 design is thus ideally suited for use in the wet area, even directly in the unit. Several individually parameterizable evaluation zones per camera image ensure maximum detection accuracy and flexibility. The creation and teach-in of a new equipment variant is simply carried out via a teach-in procedure and can be supported directly from the factory using the existing remote maintenance

functionality. In conjunction with an interface for a higher-level PDA (Weihenstephan standard), complete documentation is guaranteed.

Depending on the application, the camera modules are either integrated in the labeller or mounted outside in free passage on the conveyor belt.

The evaluation unit can of course be modularly extended with a rejection system or a fill level control from the miho

company. The VIDIOS_SC user interface is intuitively designed and adapted to the requirements of the respective system. The operator is guided via a flow chart that schematically represents the plant area. The operator is guided by the system through specific instructions during changeover, error messages or faults occur.

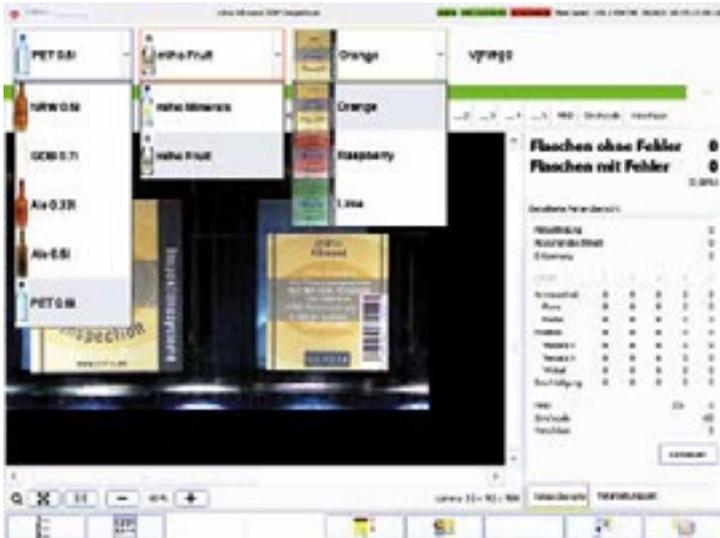
Compared to a smart camera system, the above mentioned solution has several advantages:

- Evaluation unit always available
- Integrated in a PDA
- Easy to combine with other control devices and rejection systems
- Everything from one source
- Simple and easy to use
- In the event of defects, individual components (camera, illumination unit, ...) are replaceable and not the entire module.

Another way in which the miho inspection systems can fulfil these basic requirements and ensure the highest level of consumer protection and compliance with legal regulations is the 360° full equipment inspection miho Allround. This is used exclusively in free flow after labelling. At least four digital color cameras mounted on the sides create a 360° (joined image) view of the container with the help of a mirror cabinet. The characteristics to be checked such as presence,

360° full equipment check miho Allround for a complete check of all relevant features of the container before packing.





Three-level variant management brings order and overview:

Using the container type (selection on the left), the product to be filled (center) and the equipment variant (right), the beverage bottler effortlessly masters hundreds of variants. New variants can be created simply by means of a teach-in procedure and by adopting parameters of similar equipment variants either by the customer himself or by remote support.

correctness, intactness, position, barcode, 2D code, best before date, revenue stamps, labels, etc. are checked on this composite image using individually parameterized evaluation zones and miho VIDIOS® image processing.

Intuitively and graphically guided, a new equipment variant can then be put into operation independently by the operator - made even easier by simple variant management.

Extensions for a control of the closure, e.g. for color and logo, as well as the extension by a vacuum control for closures is also possible later. Of course the miho Allround can also be extended with a rejection system or a fill level control from the miho company. Of course the interface for the miho AWeS as a higher-level PDA (Weihenstephan standard) is also on board as well as a remote maintenance function via OpenVPN.

With the miho EC-CAM and the miho Allround, external product switching is possible using a higher-level operating data acquisition system. The product can be read in using a barcode scanner, for example. A signal for product switching is then sent to the control unit. This signal is transmitted by the higher-level system via Weihenstephan standard and can be processed accordingly by the recording equipment and a product changeover can take place. 

READY TO SWITCH TO ASEPTIC PET PACKAGING?

For liquid dairy, PET packaging solutions give you brand differentiation, flexibility and cost-effective production while ensuring complete product quality and safety.

Sidel, when aseptic matters.

Sidel
Aseptic Combi Predis™
FDA approved

Key No. 96954

sidel.com

Performance
through
Understanding

 Sidel